3032

DRINKING WATER SURVEILLANCE PROGRAM

PORT DOVER WATER SUPPLY SYSTEM

ANNUAL REPORT 1990

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PORT DOVER
WATER SUPPLY SYSTEM

DRINKING WATER SURVEILLANCE PROGRAM

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EXECUTIVE SUMMARY

DRINKING WATER SURVEILLANCE PROGRAM

PORT DOVER WATER SUPPLY SYSTEM
1990 ANNUAL REPORT

The Drinking Water Surveillance Program (DWSP) for Ontario is a monitoring program providing immediate, reliable, current information on drinking water quality. The DWSP officially began in April 1986 and is designed to eventually include all municipal supplies in Ontario. In 1990, 76 systems were being monitored.

The Port Dover Water Supply System has two sources, a conventional water treatment plant which treats water from Lake Erie and the Doans Hollow spring supply. The water treatment process consists of coagulation, flocculation, sedimentation, filtration and disinfection. The plant has a design capacity of 11.7 x 1000 m^3/day. Disinfection is the only process at the Doans Hollow spring and this supplies 25% of the water used in the system. The Port Dover water supply system serves a population of approximately 4,700.

Water at the plant, at the Doans Hollow spring and at one location in the distribution system was sampled for the presence of approximately 180 parameters. Parameters were divided into the following groups: bacteriological, inorganic and physical (laboratory chemistry, field chemistry and metals), and organic (chloroaromatics, chlorophenols, pesticides and PCB, phenolics, polyaromatic hydrocarbons, specific pesticides and volatiles). Samples were analyzed for specific pesticides and chlorophenols twice a year in the spring and fall.

Table A (one for each source) is a summary of all results by group.

No known health related guidelines were exceeded.

The Port Dover Water supply system, for the sample year 1990, produced good quality water and this was maintained in the distribution system.

TABLE A

DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER WSS

SUMMARY TABLE BY SCAN

A POSITIVE VALUE DENOTES THAT THE RESULT IS GREATER THAN THE STATISTICAL LIMIT OF DETECTION AND IS QUANTIFIABLE
A '.' INDICATES THAT NO SAMPLE WAS TAKEN

SCAN	SITE RAW TESTS	POSITIVE	%POSITIVE	TREATED TESTS	POSITIVE	%POSITIVE	SITE 2 TESTS	POSITIVE	%POSITIVE
BACTERIOLOGICAL	15	11	73	5	2	40	4	2	50
CHEMISTRY (FLD)	18	18	100	36	36	100	60	56	93
CHEMISTRY (LAB)	132	108	81	132	97	73	190	161	84
METALS	144	52	36	144	38	26	230	102	44
CHLOROAROMATICS	84	0	0	84	0	0	70	0	0
CHLOROPHENOLS	12	0	0	12	0	0	.	.	.
PAH	102	0	0	102	0	0	17	0	0
PESTICIDES & PCB	204	0	0	204	0	0	105	0	0
PHENOLICS	6	2	33	6	1	16	.	.	.
SPECIFIC PESTICIDES	58	0	0	46	0	0	5	0	0
VOLATILES	174	0	0	174	24	13	145	20	13
TOTAL	949	191		945	198		826	341	

TABLE A

DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER (DOANS HOLLOW) SPRING SUPPLY

SUMMARY TABLE BY SCAN

A POSITIVE VALUE DENOTES THAT THE RESULT IS GREATER THAN THE STATISTICAL LIMIT OF DETECTION AND IS QUANTIFIABLE
A '.' INDICATES THAT NO SAMPLE WAS TAKEN

SCAN	SITE RAW TESTS	POSITIVE	%POSITIVE	TREATED TESTS	POSITIVE	%POSITIVE
BACTERIOLOGICAL	15	15	100	5	5	100
CHEMISTRY (FLD)	18	18	100	36	36	100
CHEMISTRY (LAB)	132	109	82	132	104	78
METALS	143	55	38	144	63	43
CHLOROAROMATICS	84	0	0	84	0	0
CHLOROPHENOLS	12	0	0	12	0	0
PAH	101	0	0	101	0	0
PESTICIDES & PCB	191	0	0	204	0	0
PHENOLICS	6	0	0	6	0	0
SPECIFIC PESTICIDES	58	0	0	58	0	0
VOLATILES	174	0	0	174	24	13
TOTAL	934	197		956	232	

DRINKING WATER SURVEILLANCE PROGRAM

PORT DOVER WATER SUPPLY SYSTEM
1990 ANNUAL REPORT

INTRODUCTION

The Drinking Water Surveillance Program (DWSP) for Ontario is a monitoring program providing immediate, reliable, current information on drinking water quality. The DWSP officially began in April 1986 and is designed to eventually include all municipal supplies in Ontario. In 1990, 76 supplies were being monitored.

Appendix A has a full description of the DWSP.

The DWSP was initiated for the Port Dover Water Supply System in the spring of 1987. Previous annual reports have been published for 1987, 1988 and 1989.

PLANT DESCRIPTION

The Port Dover Water System is supplied by of two sources, a conventional water treatment plant which treats water from Lake Erie and the Doans Hollow spring supply. The water treatment plant process consists of coagulation, flocculation, sedimentation, filtration and disinfection. The plant has a design capacity of 11.7 x 1000 m^3/day. Disinfection is the only process used at the Doans Hollow spring and this supplies 25% of the water used in the system. The Port Dover water supply system serves a population of approximately 4,700.

The sample day flows for the treatment plant ranged from 1.7 x 1000 m^3/day to 5.2 x 1000 m^3/day and the flow for Doans Hollow spring was 1.2 x 1000 m^3/day.

General plant information is presented in Table 1 and a schematic of treatment plant processes, chemical addition points and sampling locations in Figure 1.

SAMPLING AND ANALYSES

Sample lines in the plant and at the Doans Hollow spring were flushed prior to sampling to ensure that the water obtained was indicative of its origin and not residual water standing in the sample line.

At all distribution system locations two types of samples were obtained, a standing and a free flow. The standing sample consisted

of water that had been in the household plumbing and service connection for a minimum of six hours. These samples were used to make an assessment of the change in the levels of inorganic compounds and metals, due to leaching from, or deposition on, the plumbing system. The only analyses carried out on the standing samples therefore, were General Chemistry and Metals. The free flow sample represented fresh water from the distribution main, since the sample tap was flushed for five minutes prior to sampling.

Attempts were made to capture the same block of water at each sampling point by taking the retention time into consideration. Retention time was calculated by dividing the volume of water between two sampling points by sample day flow. For example, if it was determined that retention time within the plant was five hours, then there would be a five hour interval between the raw and treated sampling. Similarly, if it was estimated that it took approximately one day for the water to travel from the plant to the distribution system site, this site would be sampled one day after the treated water from the plant.

Stringent DWSP sampling protocols were followed to ensure that all samples were taken in a uniform manner (see Appendix B).

Plant operating personnel routinely analyze parameters for process control (Table 2).

Water at the plant, at the Doans Hollow spring and at one location in the distribution system was sampled for the presence of approximately 180 parameters. Parameters were divided into the following groups: bacteriological, inorganic and physical (laboratory chemistry, field chemistry and metals), and organic (chloroaromatics, chlorophenols, pesticides and PCB, phenolics, polyaromatic hydrocarbons, specific pesticides and volatiles). Samples were analyzed for specific pesticides and chlorophenols twice a year in the spring and fall. Laboratory analyses were conducted at the Ministry of the Environment facilities in Rexdale, Ontario.

RESULTS

Field measurements were recorded on the day of sampling and were entered onto the DWSP database as submitted by plant personnel.

Table 3 contains information on delay time between raw and treated water sampling, flow rate, and treatment chemical dosages.

Table 4 is a summary break-down of the number of water samples analyzed by parameter and by water type. The number of times that a positive or trace result was detected is also reported.

Positive denotes that the result is greater than the statistical limit of detection established by the Ministry of the Environment laboratory staff and is quantifiable. Trace (<T) denotes that the level measured is greater than the lowest value detectable by the method but lies so close to the detection limit that it cannot be confidently quantified.

Table 5 presents the results for parameters detected on at least one occasion.

Table 6 lists all parameters analyzed in the DWSP.

Associated guidelines and detection limits are also supplied on Tables 5 and 6. Parameters are listed alphabetically within each scan.

DISCUSSION

GENERAL

Water quality was judged by comparison with the Ontario Drinking Water Objectives publication (ODWOs). When an Ontario Drinking Water Objective (ODWO) was not available, guidelines/limits from other agencies were used. These guidelines were obtained from the Parameter Listing System database.

IN THIS REPORT, DISCUSSION IS LIMITED TO:

- **THE TREATED AND DISTRIBUTED WATER;**
- **ONLY THOSE PARAMETERS WITH CONCENTRATIONS ABOVE GUIDELINE VALUES; AND**
- **POSITIVE ORGANIC PARAMETERS DETECTED.**

BACTERIOLOGICAL

Guidelines for bacteriological sampling and testing of a supply are developed to maintain a proper supervision of its bacteriological quality. Routine monitoring programs usually require that multiple samples be collected in a given system. Full interpretation of bacteriological quality cannot be made on the basis of single samples.

Standard plate count was the only bacteriological analysis conducted on the treated and distributed water. No results were reported above the guideline.

INORGANIC & PHYSICAL

CHEMISTRY (FIELD)

It is desirable that the temperature of drinking water be less than 15°C. The palatability of water is enhanced by its coolness. A temperature below 15°C will tend to reduce the growth of nuisance organisms and hence minimize associated taste, colour, odour and corrosion problems. The temperature of the delivered water may increase in the distribution system due to the warming effect of the soil in late summer and fall and/or as a result of higher temperatures in the source water.

Field temperature exceeded the ODWO Maximum Desirable Concentration of 15°C in 4 of 17 treated and distributed water samples with a maximum reported value of 26.0°C.

CHEMISTRY (LAB)

Elevated conductivity is often associated with high hardness levels.

Conductivity exceeded the European Economic Community Aesthetic Guideline Level of 400 umho/cm in the 6 treated water samples from the Doans Hollow spring and in 2 distribution samples with a maximum reported value of 520.0 umho/cm.

The ODWOs indicate that a hardness level of between 80 and 100 mg/L as calcium carbonate for domestic waters provides an acceptable balance between corrosion and encrustation. Water supplies with a hardness greater than 200 mg/L are considered poor and would possess a tendency to form scale deposits and result in excessive soap consumption.

Hardness exceeded the ODWO Aesthetic or Recommended Operational Guideline of 80-100 mg/L in all 17 treated and distributed water samples with a maximum reported value of 286.0 mg/L.

Turbidity in water is caused by the presence of suspended matter such as clay, silt, colloidal particles, plankton and other microscopic organisms. The most important potential health effect of turbidity is its interference with disinfection in the treatment plant and the maintenance of a chlorine residual. ODWO Maximum Acceptable Concentration for turbidity is 1.0 Formazin Turbidity Units (FTU).

The laboratory turbidity exceeded the Maximum Acceptable Concentration in 4 of 6 treated water samples from the Doans Hollow spring with a maximum reported value of 1.8 FTU but these results were not confirmed by the corresponding field turbidities which were considered to be more reliable.

METALS

At present, there is no evidence that aluminum is physiologically harmful and no health limit for drinking water has been specified. The measure of aluminum in treated water is important to indicate the efficiency of the treatment process. The ODWOs indicate that a useful guideline is to maintain a residual below 100 ug/L as aluminum in the water leaving the plant, to avoid problems in the distribution system.

Aluminum exceeded the ODWO Aesthetic or Recommended Operational Guideline of 100 ug/L in 3 of 6 plant treated water samples and 1 distribution sample with a maximum reported value of 270.0 ug/L.

ORGANIC

CHLOROAROMATICS

The results of the chloroaromatic scan showed that none were detected.

CHLOROPHENOLS

The results of the chlorophenol scan showed that none were detected.

POLYAROMATIC HYDROCARBONS (PAH)

The results of the PAH scan showed that one parameter was detected at a trace level in the one distribution sample analyzed.

PESTICIDES & PCB

The results of the PCB scan showed that none were detected.

The results of the regular pesticide scan showed that none were detected above trace levels.

PHENOLICS

Phenolic compounds are present in the aquatic environment as a result of natural and/or industrial processes. The ODWOs recommend, as an operational guideline, that phenolic substances in drinking water not exceed 2.0 ug/L. This limit has been set primarily to prevent undesirable taste and odours, particularly in chlorinated water. No results exceeded the guideline.

SPECIFIC PESTICIDES

The results of the specific pesticides scan showed that none were detected.

VOLATILES

The detection of benzene, ethylbenzene, toluene and xylenes at low, trace levels may be a laboratory artifact derived from the analytical methodology.

Trihalomethanes (THMs) are produced during the water treatment process and will always occur in chlorinated waters. THMs are comprised of chloroform, chlorodibromomethane and dichlorobromomethane; bromoform occurs occasionally. Results are reported for the individual compounds as well as for total THMs. Only total THMs results are discussed.

Total THMs were found at positive levels in all 11 plant treated and distributed water samples analyzed with a maximum level of 51.7 ug/L and in all 6 treated water samples from the Doans Hollow spring with a maximum level of 54.3 ug/L. This was below the ODWO Maximum Acceptable Concentration of 350 ug/L.

CONCLUSIONS

The Port Dover Water supply system, for the sample year 1990, produced good quality water and this was maintained in the distribution system.

No known health related guidelines were exceeded.

TABLE 1

DRINKING WATER SURVEILLANCE PROGRAM

PLANT GENERAL REPORT

WORKS #: 220000399
PLANT NAME: PORT DOVER WSS

DISTRICT: HAMILTON
REGION: WEST CENTRAL
DISTRICT OFFICER :J. VOGT

UTM #: 17S645304736950

PLANT SUPERINTENDENT: WAYNE WIGHT

ADDRESS: 316 NELSON STREET
PORT DOVER,ONTARIO
N0A 1N0
(519-583-1930)

MUNICIPALITY: CITY OF NANTICOKE
AUTHORITY: REGION OF HALDIMAND-NORFOLK

PLANT INFORMATION

PLANT VOLUME:	-	(X 1000 M3)
DESIGN CAPACITY:	11.400	(X 1000 M3/DAY)
RATED CAPACITY:	-	(X 1000 M3/DAY)
DOANS HOLLOW SPRING SUPPLY:	1.363	(X 1000 M3/DAY)

MUNICIPALITY	POPULATION
PORT DOVER	4,682

TABLE 2
DRINKING WATER SURVEILLANCE PROGRAM
IN-PLANT MONITORING

PARAMETER	LOCATION	FREQUENCY
TOTAL CHLORINE RESIDUAL	TREATED WATER	EVERY 8 HOURS
PH	TREATED WATER	MONTHLY
TEMPERATURE	RAW WATER	DAILY
TURBIDITY	TREATED WATER	CONTINUOUS

TABLE 3

DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER WTP SAMPLE DAY CONDITIONS FOR 1990

			TREATMENT CHEMICAL DOSAGE MG/L		
			PRE CHLORINATION	COAGULATION	POST CHLORINATION
			CHLORINE	POLY ALUMINUM CHLORI	CHLORINE
ATE	DELAY * TIME(HRS)	FLOW (1000M3)			
AN 23	18.25	2.239	6.08	13.50	11.78
AR 27	2.00	2.200	.85	6.48	2.11
AY 29	2.00	.000	.86	2.67	1.30
UL 30	2.00	5.250	.80	5.24	.72
EP 25	2.00	1.800	1.60	4.35	.75
OV 26	2.00	1.700	1.00	5.00	.48

TABLE 3

RINKING WATER SURVEILLANCE PROGRAM PORT DOVER (DOANS HOLLOW) SPRING SUPPLY SAMPLE DAY C 1990

			TREATMENT CHEMICAL DOSAGE MG/L
			PRE CHLORINATION
			SODIUM HYPOCHLORITE
ATE	DELAY * TIME(HRS)	FLOW (1000M3)	
AN 22	24.00	1.200	1.25
AR 26	.50	1.200	.65
AY 28	.50	1.200	1.10
UL 30	.50	1.200	.65
EP 24	.00	1.200	2.08
OV 26	24.00	1.200	6.60

* THE DELAY TIME BETWEEN THE RAW AND TREATED WATER SAMPLING, SHOULD ESTIMATE THE RETENTION TIME.

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER WSS
SUMMARY TABLE OF RESULTS (1990)

SCAN PARAMETER	RAW TOTAL	RAW POSITIVE	RAW TRACE	TREATED TOTAL	TREATED POSITIVE	TREATED TRACE	SITE 2 TOTAL	SITE 2 POSITIVE	SITE 2 TRACE
BACTERIOLOGICAL									
FECAL COLIFORM MF	5	3	0	.	.	.	.	.	.
STANDRD PLATE CNT MF	.	.	.	5	2	0	4	2	0
TOTAL COLIFORM MF	5	3	0	.	.	.	.	.	.
T COLIFORM BCKGRD MF	5	5	0	.	.	.	.	.	.
*TOTAL GROUP BACTERIOLOGICAL	15	11	0	5	2	0	4	2	0
CHEMISTRY (FLD)									
FLD CHLORINE (COMB)	.	.	.	6	6	0	10	8	0
FLD CHLORINE FREE	.	.	.	6	6	0	10	9	0
FLD CHLORINE (TOTAL)	.	.	.	6	6	0	10	9	0
FLD PH	6	6	0	6	6	0	10	10	0
FLD TEMPERATURE	6	6	0	6	6	0	10	10	0
FLD TURBIDITY	6	6	0	6	6	0	10	10	0
*TOTAL SCAN CHEMISTRY (FLD)	18	18	0	36	36	0	60	56	0
CHEMISTRY (LAB)									
ALKALINITY	6	6	0	6	6	0	10	10	0
CALCIUM	6	6	0	6	6	0	10	10	0
CYANIDE	6	0	0	6	0	0	.	.	.
CHLORIDE	6	6	0	6	6	0	10	10	0
COLOUR	6	0	5	6	0	3	10	1	9
CONDUCTIVITY	6	6	0	6	6	0	10	10	0
DISS ORG CARBON	6	6	0	6	6	0	10	10	0
FLUORIDE	6	6	0	6	6	0	10	10	0
HARDNESS	6	6	0	6	6	0	10	10	0
IONCAL	6	6	0	6	6	0	10	10	0
LANGELIERS INDEX	6	6	0	6	6	0	10	10	0
MAGNESIUM	6	6	0	6	6	0	10	10	0
SODIUM	6	6	0	6	6	0	10	10	0
AMMONIUM TOTAL	6	3	0	6	1	1	10	1	4
NITRITE	6	2	4	6	1	3	10	0	8
TOTAL NITRATES	6	6	0	6	6	0	10	10	0
NITROGEN TOT KJELD	6	6	0	6	6	0	10	9	1
PH	6	6	0	6	6	0	10	10	0
PHOSPHORUS FIL REACT	6	1	3	6	0	0	.	.	.
PHOSPHORUS TOTAL	6	6	0	6	0	4	.	.	.
SULPHATE	6	6	0	6	6	0	10	10	0
TURBIDITY	6	6	0	6	5	1	10	10	0
*TOTAL SCAN CHEMISTRY (LAB)	132	108	12	132	97	12	190	161	22

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER WSS
SUMMARY TABLE OF RESULTS (1990)

SCAN PARAMETER	RAW			TREATED			SITE 2		
	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
METALS									
SILVER	6	0	0	6	0	0	10	0	0
ALUMINUM	6	6	0	6	6	0	10	10	0
ARSENIC	6	0	6	6	0	6	10	0	10
BARIUM	6	6	0	6	6	0	10	10	0
BORON	6	6	0	6	6	0	10	10	0
BERYLLIUM	6	0	2	6	0	0	10	0	5
CADMIUM	6	0	0	6	0	1	10	0	1
COBALT	6	0	6	6	0	5	10	0	7
CHROMIUM	6	0	6	6	0	6	10	3	7
COPPER	6	0	6	6	0	6	10	8	2
IRON	6	5	1	6	1	0	10	4	6
MERCURY	6	0	1	6	0	0	.	.	.
MANGANESE	6	6	0	6	2	4	10	10	0
MOLYBDENUM	6	6	0	6	6	0	10	10	0
NICKEL	6	0	5	6	0	4	10	1	5
LEAD	6	2	4	6	0	4	10	5	5
ANTIMONY	6	0	6	6	1	5	10	3	7
SELENIUM	6	0	0	6	0	4	10	0	6
STRONTIUM	6	6	0	6	6	0	10	10	0
TITANIUM	6	4	2	6	2	4	10	8	2
THALLIUM	6	0	1	6	0	1	10	0	0
URANIUM	6	0	6	6	0	6	10	3	7
VANADIUM	6	1	5	6	0	6	10	0	10
ZINC	6	4	2	6	2	4	10	7	3
*TOTAL SCAN METALS	144	52	59	144	38	66	230	102	83
*TOTAL GROUP INORGANIC & PHYSICAL	294	178	71	312	171	78	480	319	105
CHLOROAROMATICS									
HEXACHLOROBUTADIENE	6	0	0	6	0	0	5	0	0
123 TRICHLOROBENZENE	6	0	0	6	0	0	5	0	0
1234 T-CHLOROBENZENE	6	0	0	6	0	0	5	0	0
1235 T-CHLOROBENZENE	6	0	0	6	0	0	5	0	0
124 TRICHLOROBENZENE	6	0	0	6	0	0	5	0	0
1245 T-CHLOROBENZENE	6	0	0	6	0	0	5	0	0
135 TRICHLOROBENZENE	6	0	0	6	0	0	5	0	0
HCB	6	0	0	6	0	0	5	0	0
HEXACHLOROETHANE	6	0	0	6	0	0	5	0	0
OCTACHLOROSTYRENE	6	0	0	6	0	0	5	0	0
PENTACHLOROBENZENE	6	0	0	6	0	0	5	0	0
236 TRICHLOROTOLUENE	6	0	0	6	0	0	5	0	0
245 TRICHLOROTOLUENE	6	0	0	6	0	0	5	0	0
26A TRICHLOROTOLUENE	6	0	0	6	0	0	5	0	0
*TOTAL SCAN CHLOROAROMATICS	84	0	0	84	0	0	70	0	0

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER WSS
SUMMARY TABLE OF RESULTS (1990)

SCAN PARAMETER	RAW			TREATED			SITE 2		
	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
CHLOROPHENOLS									
234 TRICHLOROPHENOL	2	0	0	2	0	0	.	.	.
2345 T-CHLOROPHENOL	2	0	0	2	0	0	.	.	.
2356 T-CHLOROPHENOL	2	0	0	2	0	0	.	.	.
245-TRICHLOROPHENOL	2	0	0	2	0	0	.	.	.
246-TRICHLOROPHENOL	2	0	0	2	0	0	.	.	.
PENTACHLOROPHENOL	2	0	0	2	0	0	.	.	.
*TOTAL SCAN CHLOROPHENOLS	12	0	0	12	0	0	0	0	0
PAH									
PHENANTHRENE	6	0	0	6	0	0	1	0	1
ANTHRACENE	6	0	0	6	0	0	1	0	0
FLUORANTHENE	6	0	0	6	0	0	1	0	0
PYRENE	6	0	0	6	0	0	1	0	0
BENZO(A)ANTHRACENE	6	0	0	6	0	0	1	0	0
CHRYSENE	6	0	0	6	0	0	1	0	0
DIMETH. BENZ(A)ANTHR	6	0	0	6	0	0	1	0	0
BENZO(E) PYRENE	6	0	0	6	0	0	1	0	0
BENZO(B) FLUORANTHEN	6	0	0	6	0	0	1	0	0
PERYLENE	6	0	0	6	0	0	1	0	0
BENZO(K) FLUORANTHEN	6	0	0	6	0	0	1	0	0
BENZO(A) PYRENE	6	0	0	6	0	0	1	0	0
BENZO(G,H,I) PERYLEN	6	0	0	6	0	0	1	0	0
DIBENZO(A,H) ANTHRAC	6	0	0	6	0	0	1	0	0
INDENO(1,2,3-C,D) PY	6	0	0	6	0	0	1	0	0
BENZO(B) CHRYSENE	6	0	0	6	0	0	1	0	0
CORONENE	6	0	0	6	0	0	1	0	0
*TOTAL SCAN PAH	102	0	0	102	0	0	17	0	1
PESTICIDES & PCB									
ALDRIN	6	0	0	6	0	0	5	0	0
ALPHA BHC	6	0	3	6	0	3	5	0	3
BETA BHC	6	0	0	6	0	0	5	0	0
LINDANE	6	0	1	6	0	0	5	0	0
ALPHA CHLORDANE	6	0	0	6	0	0	5	0	0
GAMMA CHLORDANE	6	0	0	6	0	0	5	0	0
DIELDRIN	6	0	0	6	0	0	5	0	0
METHOXYCHLOR	6	0	0	6	0	0	5	0	0
ENDOSULFAN I	6	0	0	6	0	0	5	0	0
ENDOSULFAN II	6	0	0	6	0	0	5	0	0
ENDRIN	6	0	0	6	0	0	5	0	0
ENDOSULFAN SULPHATE	6	0	0	6	0	0	5	0	0
HEPTACHLOR EPOXIDE	6	0	0	6	0	0	5	0	0
HEPTACHLOR	6	0	0	6	0	0	5	0	0
MIREX	6	0	0	6	0	0	5	0	0
OXYCHLORDANE	6	0	0	6	0	0	5	0	0
OPDDT	6	0	0	6	0	0	5	0	0
PCB	6	0	0	6	0	0	5	0	0
DDD	6	0	0	6	0	0	5	0	0
PPDDE	6	0	0	6	0	0	5	0	0

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER WSS
SUMMARY TABLE OF RESULTS (1990)

SCAN PARAMETER	RAW			TREATED			SITE 2		
	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
PPDDT	6	0	0	6	0	0	5	0	0
AMETRINE	6	0	0	6	0	0	.	.	.
ATRAZINE	6	0	1	6	0	1	.	.	.
ATRATONE	6	0	0	6	0	0	.	.	.
CYANAZINE (BLADEX)	6	0	0	6	0	0	.	.	.
DESETHYLATRAZINE	6	0	0	6	0	0	.	.	.
D-ETHYL SIMAZINE	6	0	0	6	0	0	.	.	.
PROMETONE	6	0	0	6	0	0	.	.	.
PROPAZINE	6	0	0	6	0	0	.	.	.
PROMETRYNE	6	0	0	6	0	0	.	.	.
METRIBUZIN (SENCOR)	5	0	0	5	0	0	.	.	.
SIMAZINE	6	0	0	6	0	0	.	.	.
ALACHLOR (LASSO)	6	0	0	6	0	0	.	.	.
METOLACHLOR	6	0	0	6	0	0	.	.	.
HEXACLCYCLOPENTADIEN	1	0	0	1	0	0	.	.	.
*TOTAL SCAN PESTICIDES & PCB	204	0	5	204	0	4	105	0	3
PHENOLICS									
PHENOLICS	6	2	2	6	1	3	.	.	.
*TOTAL SCAN PHENOLICS	6	2	2	6	1	3	0	0	0
SPECIFIC PESTICIDES									
TOXAPHENE	6	0	0	6	0	0	5	0	0
2,4,5-T	2	0	0	2	0	0	.	.	.
2,4-D	2	0	0	2	0	0	.	.	.
2,4-DB	2	0	0	2	0	0	.	.	.
2,4 D PROPIONIC ACID	2	0	0	2	0	0	.	.	.
DICAMBA	2	0	0	2	0	0	.	.	.
PICHLORAM	0	0	0	0	0	0	.	.	.
SILVEX	2	0	0	2	0	0	.	.	.
DIAZINON	2	0	0	1	0	0	.	.	.
DICHLOROVOS	2	0	0	1	0	0	.	.	.
CHLORPYRIFOS	2	0	0	1	0	0	.	.	.
ETHION	2	0	0	1	0	0	.	.	.
AZINPHOS-METHYL	0	0	0	0	0	0	.	.	.
MALATHION	2	0	0	1	0	0	.	.	.
MEVINPHOS	2	0	0	1	0	0	.	.	.
METHYL PARATHION	2	0	0	1	0	0	.	.	.
METHYLTRITHION	2	0	0	1	0	0	.	.	.
PARATHION	2	0	0	1	0	0	.	.	.
PHORATE	2	0	0	1	0	0	.	.	.
RELDAN	2	0	0	1	0	0	.	.	.
RONNEL	2	0	0	1	0	0	.	.	.
AMINOCARB	0	0	0	0	0	0	.	.	.
BENOMYL	0	0	0	0	0	0	.	.	.
BUX	0	0	0	0	0	0	.	.	.
CARBOFURAN	2	0	0	2	0	0	.	.	.
CICP	2	0	0	2	0	0	.	.	.
DIALLATE	2	0	0	2	0	0	.	.	.

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER WSS
SUMMARY TABLE OF RESULTS (1990)

SCAN PARAMETER	RAW			TREATED			SITE 2		
	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
EPTAM	2	0	0	2	0	0	.	.	.
IPC	2	0	0	2	0	0	.	.	.
PROPOXUR	2	0	0	2	0	0	.	.	.
CARBARYL	2	0	0	2	0	0	.	.	.
BUTYLATE	2	0	0	2	0	0	.	.	.
*TOTAL SCAN SPECIFIC PESTICIDES	58	0	0	46	0	0	5	0	0
VOLATILES									
BENZENE	6	0	0	6	0	2	5	0	2
TOLUENE	6	0	0	6	0	5	5	0	4
ETHYLBENZENE	6	0	0	6	0	2	5	0	4
P-XYLENE	6	0	0	6	0	0	5	0	0
M-XYLENE	6	0	0	6	0	1	5	0	0
O-XYLENE	6	0	0	6	0	1	5	0	0
STYRENE	6	0	0	6	0	2	5	0	5
1,1 DICHLOROETHYLENE	6	0	0	6	0	0	5	0	0
METHYLENE CHLORIDE	6	0	0	6	0	0	5	0	0
T1,2DICHLOROETHYLENE	6	0	0	6	0	0	5	0	0
1,1 DICHLOROETHANE	6	0	0	6	0	0	5	0	0
CHLOROFORM	6	0	6	6	6	0	5	5	0
111, TRICHLOROETHANE	6	0	0	6	0	0	5	0	0
1,2 DICHLOROETHANE	6	0	0	6	0	0	5	0	0
CARBON TETRACHLORIDE	6	0	0	6	0	0	5	0	0
1,2 DICHLOROPROPANE	6	0	0	6	0	0	5	0	0
TRICHLOROETHYLENE	6	0	0	6	0	0	5	0	0
DICHLOROBROMOMETHANE	6	0	5	6	6	0	5	5	0
112 TRICHLOROETHANE	6	0	0	6	0	0	5	0	0
CHLORODIBROMOMETHANE	6	0	3	6	6	0	5	5	0
T-CHLOROETHYLENE	6	0	0	6	0	0	5	0	0
BROMOFORM	6	0	0	6	0	5	5	0	3
1122 T-CHLOROETHANE	6	0	0	6	0	0	5	0	0
CHLOROBENZENE	6	0	0	6	0	0	5	0	0
1,4 DICHLOROBENZENE	6	0	0	6	0	0	5	0	0
1,3 DICHLOROBENZENE	6	0	0	6	0	0	5	0	0
1,2 DICHLOROBENZENE	6	0	0	6	0	0	5	0	0
ETHLYENE DIBROMIDE	6	0	0	6	0	0	5	0	0
TOTL TRIHALOMETHANES	6	0	3	6	6	0	5	5	0
*TOTAL SCAN VOLATILES	174	0	17	174	24	18	145	20	18
*TOTAL GROUP ORGANIC	640	2	24	628	25	25	342	20	22

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TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER (DOANS HOLLOW) SPRING SUPPLY
SUMMARY TABLE OF RESULTS (1990)

SCAN PARAMETER	RAW TOTAL	RAW POSITIVE	RAW TRACE	TREATED TOTAL	TREATED POSITIVE	TREATED TRACE
BACTERIOLOGICAL						
FECAL COLIFORM MF	5	5	0	.	.	.
STANDRD PLATE CNT MF	.	.	.	5	5	0
TOTAL COLIFORM MF	5	5	0	.	.	.
T COLIFORM BCKGRD MF	5	5	0	.	.	.
*TOTAL GROUP BACTERIOLOGICAL	15	15	0	5	5	0
CHEMISTRY (FLD)						
FLD CHLORINE (COMB)	.	.	.	6	6	0
FLD CHLORINE FREE	.	.	.	6	6	0
FLD CHLORINE (TOTAL)	.	.	.	6	6	0
FLD PH	6	6	0	6	6	0
FLD TEMPERATURE	6	6	0	6	6	0
FLD TURBIDITY	6	6	0	6	6	0
*TOTAL SCAN CHEMISTRY (FLD)	18	18	0	36	36	0
CHEMISTRY (LAB)						
ALKALINITY	6	6	0	6	6	0
CALCIUM	6	6	0	6	6	0
CYANIDE	6	0	0	6	0	0
CHLORIDE	6	6	0	6	6	0
COLOUR	6	6	0	6	6	0
CONDUCTIVITY	6	6	0	6	6	0
DISS ORG CARBON	6	6	0	6	6	0
FLUORIDE	6	6	0	6	6	0
HARDNESS	6	6	0	6	6	0
IONCAL	6	6	0	6	6	0
LANGELIERS INDEX	6	6	0	6	6	0
MAGNESIUM	6	6	0	6	6	0
SODIUM	6	6	0	6	6	0
AMMONIUM TOTAL	6	1	2	6	0	2
NITRITE	6	6	0	6	1	4
TOTAL NITRATES	6	6	0	6	6	0
NITROGEN TOT KJELD	6	5	1	6	3	3
PH	6	6	0	6	6	0
PHOSPHORUS FIL REACT	6	0	5	6	3	3
PHOSPHORUS TOTAL	6	1	5	6	1	5
SULPHATE	6	6	0	6	6	0
TURBIDITY	6	6	0	6	6	0
*TOTAL SCAN CHEMISTRY (LAB)	132	109	13	132	104	17

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER (DOANS HOLLOW) SPRING SUPPLY
SUMMARY TABLE OF RESULTS (1990)

SCAN PARAMETER	RAW			TREATED		
	TOTAL	POSITIVE	TRACE	TOTAL	POSITIVE	TRACE
METALS						
SILVER	6	0	0	6	0	0
ALUMINUM	6	6	0	6	6	0
ARSENIC	6	0	6	6	0	6
BARIUM	6	6	0	6	6	0
BORON	6	4	2	6	4	2
BERYLLIUM	6	0	1	6	0	1
CADMIUM	6	0	0	6	0	0
COBALT	6	0	4	6	0	4
CHROMIUM	6	1	3	6	1	4
COPPER	6	0	1	6	6	0
IRON	6	6	0	6	6	0
MERCURY	5	0	1	6	0	1
MANGANESE	6	6	0	6	6	0
MOLYBDENUM	6	3	3	6	4	2
NICKEL	6	0	0	6	0	1
LEAD	6	0	4	6	0	5
ANTIMONY	6	0	6	6	0	6
SELENIUM	6	0	0	6	0	0
STRONTIUM	6	6	0	6	6	0
TITANIUM	6	6	0	6	6	0
THALLIUM	6	0	0	6	0	0
URANIUM	6	6	0	6	6	0
VANADIUM	6	0	6	6	0	6
ZINC	6	5	1	6	6	0
*TOTAL SCAN METALS	143	55	38	144	63	38
*TOTAL GROUP INORGANIC & PHYSICAL	293	182	51	312	203	55
CHLOROAROMATICS						
HEXACHLOROBUTADIENE	6	0	0	6	0	0
123 TRICHLOROBENZENE	6	0	0	6	0	0
1234 T-CHLOROBENZENE	6	0	0	6	0	0
1235 T-CHLOROBENZENE	6	0	0	6	0	0
124 TRICHLOROBENZENE	6	0	0	6	0	0
1245 T-CHLOROBENZENE	6	0	0	6	0	0
135 TRICHLOROBENZENE	6	0	0	6	0	0
HCB	6	0	0	6	0	0
HEXACHLOROETHANE	6	0	0	6	0	0
OCTACHLOROSTYRENE	6	0	0	6	0	0
PENTACHLOROBENZENE	6	0	0	6	0	0
236 TRICHLOROTOLUENE	6	0	0	6	0	0
245 TRICHLOROTOLUENE	6	0	0	6	0	0
26A TRICHLOROTOLUENE	6	0	0	6	0	0
*TOTAL SCAN CHLOROAROMATICS	84	0	0	84	0	0

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER (DOANS HOLLOW) SPRING SUPPLY
SUMMARY TABLE OF RESULTS (1990)

SCAN PARAMETER	RAW TOTAL	RAW POSITIVE	RAW TRACE	TREATED TOTAL	TREATED POSITIVE	TREATED TRACE
CHLOROPHENOLS						
234 TRICHLOROPHENOL	2	0	0	2	0	0
2345 T-CHLOROPHENOL	2	0	0	2	0	0
2356 T-CHLOROPHENOL	2	0	0	2	0	0
245-TRICHLOROPHENOL	2	0	0	2	0	0
246-TRICHLOROPHENOL	2	0	0	2	0	0
PENTACHLOROPHENOL	2	0	0	2	0	0
*TOTAL SCAN CHLOROPHENOLS	12	0	0	12	0	0
PAH						
PHENANTHRENE	6	0	0	6	0	0
ANTHRACENE	5	0	0	5	0	0
FLUORANTHENE	6	0	0	6	0	0
PYRENE	6	0	0	6	0	0
BENZO(A)ANTHRACENE	6	0	0	6	0	0
CHRYSENE	6	0	0	6	0	0
DIMETH. BENZ(A)ANTHR	6	0	0	6	0	0
BENZO(E) PYRENE	6	0	0	6	0	0
BENZO(B) FLUORANTHEN	6	0	0	6	0	0
PERYLENE	6	0	0	6	0	0
BENZO(K) FLUORANTHEN	6	0	0	6	0	0
BENZO(A) PYRENE	6	0	0	6	0	0
BENZO(G,H,I) PERYLEN	6	0	0	6	0	0
DIBENZO(A,H) ANTHRAC	6	0	0	6	0	0
INDENO(1,2,3-C,D) PY	6	0	0	6	0	0
BENZO(B) CHRYSENE	6	0	0	6	0	0
CORONENE	6	0	0	6	0	0
*TOTAL SCAN PAH	101	0	0	101	0	0
PESTICIDES & PCB						
ALDRIN	6	0	0	6	0	0
ALPHA BHC	6	0	0	6	0	0
BETA BHC	6	0	0	6	0	0
LINDANE	6	0	0	6	0	0
ALPHA CHLORDANE	6	0	0	6	0	0
GAMMA CHLORDANE	6	0	0	6	0	0
DIELDRIN	6	0	0	6	0	0
METHOXYCHLOR	6	0	0	6	0	0
ENDOSULFAN 1	6	0	0	6	0	0
ENDOSULFAN II	6	0	0	6	0	0
ENDRIN	6	0	0	6	0	0
ENDOSULFAN SULPHATE	6	0	0	6	0	0
HEPTACHLOR EPOXIDE	6	0	0	6	0	0
HEPTACHLOR	6	0	0	6	0	0
MIREX	6	0	0	6	0	0
OXYCHLORDANE	6	0	0	6	0	0
OPDDT	6	0	0	6	0	0
PCB	6	0	0	6	0	0
DDD	6	0	0	6	0	0
PPDDE	6	0	0	6	0	0

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER (DOANS HOLLOW) SPRING SUPPLY
SUMMARY TABLE OF RESULTS (1990)

SCAN PARAMETER	RAW TOTAL	RAW POSITIVE	RAW TRACE	TREATED TOTAL	TREATED POSITIVE	TREATED TRACE
PPDDT	6	0	0	6	0	0
AMETRINE	5	0	0	6	0	0
ATRAZINE	5	0	1	6	0	1
ATRATONE	5	0	0	6	0	0
CYANAZINE (BLADEX)	5	0	0	6	0	0
DESETHYLATRAZINE	5	0	0	6	0	0
D-ETHYL SIMAZINE	5	0	0	6	0	0
PROMETONE	5	0	0	6	0	0
PROPAZINE	5	0	0	6	0	0
PROMETRYNE	5	0	0	6	0	0
METRIBUZIN (SENCOR)	4	0	0	5	0	0
SIMAZINE	5	0	0	6	0	0
ALACHLOR (LASSO)	5	0	0	6	0	0
METOLACHLOR	5	0	0	6	0	0
HEXACLCYCLOPENTADIEN	1	0	0	1	0	0
*TOTAL SCAN PESTICIDES & PCB	191	0	1	204	0	1
PHENOLICS						
PHENOLICS	6	0	3	6	0	2
*TOTAL SCAN PHENOLICS	6	0	3	6	0	2
SPECIFIC PESTICIDES						
TOXAPHENE	6	0	0	6	0	0
2,4,5-T	2	0	0	2	0	0
2,4-D	2	0	0	2	0	0
2,4-DB	2	0	0	2	0	0
2,4 D PROPIONIC ACID	2	0	0	2	0	0
DICAMBA	2	0	0	2	0	0
PICHLORAM	0	0	0	0	0	0
SILVEX	2	0	0	2	0	0
DIAZINON	2	0	0	2	0	0
DICHLOROVOS	2	0	0	2	0	0
CHLORPYRIFOS	2	0	0	2	0	0
ETHION	2	0	0	2	0	0
AZINPHOS-METHYL	0	0	0	0	0	0
MALATHION	2	0	0	2	0	0
MEVINPHOS	2	0	0	2	0	0
METHYL PARATHION	2	0	0	2	0	0
METHYLTRITHION	2	0	0	2	0	0
PARATHION	2	0	0	2	0	0
PHORATE	2	0	0	2	0	0
RELDAN	2	0	0	2	0	0
RONNEL	2	0	0	2	0	0
AMINOCARB	0	0	0	0	0	0
BENOMYL	0	0	0	0	0	0
BUX	0	0	0	0	0	0
CARBOFURAN	2	0	0	2	0	0
CICP	2	0	0	2	0	0
DIALLATE	2	0	0	2	0	0

TABLE 4
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER (DOANS HOLLOW) SPRING SUPPLY
SUMMARY TABLE OF RESULTS (1990)

SCAN PARAMETER	RAW TOTAL	RAW POSITIVE	RAW TRACE	TREATED TOTAL	TREATED POSITIVE	TREATED TRACE
EPTAM	2	0	0	2	0	0
IPC	2	0	0	2	0	0
PROPOXUR	2	0	0	2	0	0
CARBARYL	2	0	0	2	0	0
BUTYLATE	2	0	0	2	0	0
*TOTAL SCAN SPECIFIC PESTICIDES	58	0	0	58	0	0
VOLATILES						
BENZENE	6	0	0	6	0	1
TOLUENE	6	0	1	6	0	1
ETHYLBENZENE	6	0	1	6	0	2
P-XYLENE	6	0	0	6	0	0
M-XYLENE	6	0	0	6	0	0
O-XYLENE	6	0	0	6	0	0
STYRENE	6	0	1	6	0	1
1,1 DICHLOROETHYLENE	6	0	0	6	0	0
METHYLENE CHLORIDE	6	0	1	6	0	0
T1,2DICHLOROETHYLENE	6	0	0	6	0	0
1,1 DICHLOROETHANE	6	0	0	6	0	0
CHLOROFORM	6	0	0	6	6	0
111, TRICHLOROETHANE	6	0	0	6	0	0
1,2 DICHLOROETHANE	6	0	0	6	0	0
CARBON TETRACHLORIDE	6	0	0	6	0	0
1,2 DICHLOROPROPANE	6	0	0	6	0	0
TRICHLOROETHYLENE	6	0	0	6	0	0
DICHLOROBROMOMETHANE	6	0	0	6	6	0
112 TRICHLOROETHANE	6	0	0	6	0	0
CHLORODIBROMOMETHANE	6	0	0	6	6	0
T-CHLOROETHYLENE	6	0	0	6	0	0
BROMOFORM	6	0	0	6	0	1
1122 T-CHLOROETHANE	6	0	0	6	0	0
CHLOROBENZENE	6	0	0	6	0	0
1,4 DICHLOROBENZENE	6	0	0	6	0	0
1,3 DICHLOROBENZENE	6	0	0	6	0	0
1,2 DICHLOROBENZENE	6	0	0	6	0	0
ETHLYENE DIBROMIDE	6	0	0	6	0	0
TOTL TRIHALOMETHANES	6	0	0	6	6	0
*TOTAL SCAN VOLATILES	174	0	4	174	24	6
*TOTAL GROUP ORGANIC	626	0	8	639	24	9

KEY TO TABLE 5 and 6

A ONTARIO DRINKING WATER OBJECTIVES (ODWO)
1. Maximum Acceptable Concentration (MAC)
1+. MAC for Total Trihalomethanes
2. Interim Maximum Acceptable Concentration (IMAC)
3. Aesthetic Objective (AO)
3*. AO for Total Xylenes
4. Recommended Operational Guideline

B HEALTH & WELFARE CANADA (H&W)
1. Maximum Acceptable Concentration (MAC)
2. Proposed MAC
3. Interim MAC
4. Aesthetic Objective (AO)

C WORLD HEALTH ORGANIZATION (WHO)
1. Guideline Value (GV)
2. Tentative GV
3. Aesthetic GV

D US ENVIRONMENTAL PROTECTION AGENCY (EPA)
1. Maximum Contaminant Level (MCL)
2. Suggested No-Adverse Effect Level (SNAEL)
3. Lifetime Health Advisory
4. EPA Ambient Water Quality Criteria
4T. EPA Ambient Water Quality Criteria for Total PAH

F EUROPEAN ECONOMIC COMMUNITY (EEC)
1. Health Related Guideline Level
2. Aesthetic Guideline Level
3. Maximum Admissable Concentration (MADC)

G CALIFORNIA STATE DEPARTMENT OF HEALTH-GUIDELINE VALUE

I NEW YORK STATE AMBIENT WATER GUIDELINE

N/A NONE AVAILABLE

LABORATORY RESULTS, REMARK DESCRIPTIONS

.	No Sample Taken
BDL	Below Minimum Measurement Amount
<T	Greater Than Detection Limit But Not Confident (SEE INTERPRETATION OF RESULTS ABOVE)
>	Results Are Greater Than The Upper Limit
<=>	Approximate Result
ICS	No Data: Contamination Suspected
IIL	No Data: Sample Incorrectly Labelled
IIS	No Data: Insufficient Sample
IIV	No Data: Inverted Septum
ILA	No Data: Laboratory Accident
ILD	No Data: Test Queued After Sample Discarded
INA	No Data: No Authorization To Perform Reanalysis
INP	No Data: No Procedure
INR	No Data: Sample Not Received
IOP	No Data: Obscured Plate
IQU	No Data: Quality Control Unacceptable
IPE	No Data: Procedural Error - Sample Discarded
IPH	No Data: Sample pH Outside Valid Range
IRE	No Data: Received Empty
IRO	No Data: See Attached Report (no numeric results)
ISM	No Data: Sample Missing
ISS	No Data: Send Separate Sample Properly Preserved
IUI	No Data: Indeterminant Interference
ITX	No Data: Time Expired
A3C	Approximate, Total Count Exceeded 300 Colonies
APL	Additional Peak, Large, Not Priority Pollutant
APS	Additional Peak, Less Than, Not Priority Pollutant
CIC	Possible Contamination, Improper Cap
CRO	Calculated Result Only
PPS	Test Performed On Preserved Sample
RMP	P and M-Xylene Not Separated
RRV	Rerun Verification
RVU	Reported Value Unusual
SPS	Several Peaks, Small, Not Priority Pollutant

UCR	Unreliable: Could Not Confirm By Reanalysis
UCS	Unreliable: Contamination Suspected
UIN	Unreliable: Indeterminate Interference
XP	Positive After X Number Of Hours
T#	(T06) Result Taken After # Hours

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER WSS 1990

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 2	
			STANDING	FREE FLOW
BACTERIOLOGICAL				
FECAL COLIFORM MF (CT/100ML)			**DET'N LIMIT = 0**	**GUIDELINE = 0 (A1)**
JAN	12	.	.	.
MAR	BDL	.	.	.
JUL	BDL	.	.	.
SEP	98	.	.	.
NOV	4	.	.	.
STANDRD PLATE CNT MF (COUNT/ML)			**DET'N LIMIT = 0**	**GUIDELINE = 500/ML (A3)**
JAN	.	0 <=>	.	0 <=>
MAR	.	0 <=>	.	3 <=>
JUL	.	14	.	13
SEP	.	270	.	74
NOV	.	1 <=>	.	.
TOTAL COLIFORM MF (CT/100ML)			**DET'N LIMIT = 0**	**GUIDELINE = 5/100ML(A1)**
JAN	13000	.	.	.
MAR	30 <=>	.	.	.
JUL	600 <=>	.	.	.
SEP	120	.	.	.
NOV	310	.	.	.
T COLIFORM BCKGRD MF (CT/100ML)			**DET'N LIMIT = 0**	**GUIDELINE = N/A**
JAN	17000	.	.	.
MAR	270	.	.	.
JUL	40000	.	.	.
SEP	1500	.	.	.
NOV	1600	.	.	.

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER WSS 1990

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 2	
			STANDING	FREE FLOW
CHEMISTRY (FLD)				
FLD CHLORINE (COMB) (MG/L)			DET'N LIMIT = 0	GUIDELINE = N/A
JAN	.	.200	.000	.200
MAR	.	.400	.100	.200
MAY	.	.200	.100	.200
JUL	.	.750	.000	.100
SEP	.	.300	.100	.100
NOV	.	1.000	.	.
FLD CHLORINE FREE (MG/L)			DET'N LIMIT = 0	GUIDELINE = N/A
JAN	.	.300	.000	.100
MAR	.	.600	.100	.100
MAY	.	.700	.100	.100
JUL	.	.250	.100	.200
SEP	.	.800	.100	.100
NOV	.	.700	.	.
FLD CHLORINE (TOTAL) (MG/L)			DET'N LIMIT = 0	GUIDELINE = N/A
JAN	.	.500	.000	.300
MAR	.	1.000	.200	.300
MAY	.	.900	.200	.300
JUL	.	1.000	.100	.300
SEP	.	1.100	.200	.200
NOV	.	1.700	.	.
FLD PH (DIMNSLESS)			DET'N LIMIT = N/A	GUIDELINE = 6.5-8.5(A4)
JAN	7.700	7.700	7.700	7.700
MAR	7.700	7.700	7.800	7.500
MAY	7.900	7.900	7.700	7.900
JUL	8.100	7.900	7.900	7.500
SEP	7.900	7.900	7.700	7.900
NOV	7.900	7.700	.	.
FLD TEMPERATURE (DEG.C)			DET'N LIMIT = N/A	GUIDELINE = 15 (A3)
JAN	1.000	2.000	10.000	5.500
MAR	4.000	4.000	11.000	6.200
MAY	14.000	14.500	17.000	12.100
JUL	23.000	26.000	23.000	19.000
SEP	16.200	17.000	19.000	19.000
NOV	6.800	8.000	.	.
FLD TURBIDITY (FTU)			DET'N LIMIT = N/A	GUIDELINE = 1 (A1)
JAN	44.000	.080	.340	.250
MAR	4.800	.080	.310	.420
MAY	7.900	.140	.630	.390
JUL	1.000	.150	.440	.380
SEP	3.200	.030	.270	.340
NOV	13.000	.050	.	.

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER WSS 1990

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 2	
			STANDING	FREE FLOW
CHEMISTRY (LAB)				
ALKALINITY (MG/L)			DET'N LIMIT = 0.2	GUIDELINE = 30-500 (A3)
JAN	104.400	102.300	102.200	116.600
MAR	99.500	101.400	134.500	163.400
MAY	97.200	94.700	162.500	127.800
JUL	92.200	121.300	127.400	120.100
SEP	95.300	90.400	151.400	170.100
NOV	100.200	97.900	.	.
CALCIUM (MG/L)			DET'N LIMIT = 0.2	GUIDELINE = 100 (F2)
JAN	39.200	42.200	40.800	45.300
MAR	38.800	40.800	55.400	67.000
MAY	35.200	35.900	62.600	47.600
JUL	32.600	46.200	50.200	46.000
SEP	37.000	37.600	62.000	70.200
NOV	38.700	39.800	.	.
CHLORIDE (MG/L)			DET'N LIMIT = 0.2	GUIDELINE = 250 (A3)
JAN	14.600	20.400	18.800	17.300
MAR	14.300	17.600	15.000	12.400
MAY	14.800	17.600	12.500	15.100
JUL	15.500	15.600	15.600	16.100
SEP	15.200	18.400	14.000	12.000
NOV	13.900	16.800	.	.
COLOUR (HZU)			DET'N LIMIT = 0.5	GUIDELINE = 5 (A3)
JAN	1.000 <T	1.500 <T	2.000 <T	2.500
MAR	.500 <T	.500 <T	1.500 <T	1.500 <T
MAY	1.500 <T	BDL	2.000 <T	2.000 <T
JUL	2.000 <T	1.500 <T	1.000 <T	1.000 <T
SEP	1.000 <T	BDL	.500 <T	1.000 <T
NOV	BDL	BDL	.	.
CONDUCTIVITY (UMHO/CM)			DET'N LIMIT = 1.	GUIDELINE = 400 (F2)
JAN	293	320	309	341
MAR	286	307	382	446
MAY	285	291	443	368
JUL	279	356	370	353
SEP	283	285	420	459
NOV	289	294	.	.
DISS ORG CARBON (MG/L)			DET'N LIMIT = .100	GUIDELINE = 5.0 (A3)
JAN	2.100	1.800	1.700	1.500
MAR	2.000	1.700	1.800	1.200
MAY	1.900	1.700	1.300	1.500
JUL	2.200	1.600	1.700	1.600
SEP	2.100	1.800	1.400	1.200
NOV	1.900	1.700	.	.
FLUORIDE (MG/L)			DET'N LIMIT = 0.01	GUIDELINE = 2.4 (A1)
JAN	.120	.100	.100	.100
MAR	.100	.100	.100	.100
MAY	.120	.120	.100	.100
JUL	.140	.120	.120	.120
SEP	.120	.100	.100	.060
NOV	.120	.120	.	.

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER WSS 1990

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 2	
			STANDING	FREE FLOW
HARDNESS (MG/L)			DET'N LIMIT = 0.5	GUIDELINE = 80-100 (A4)
JAN	133.000	140.500	137.000	154.000
MAR	133.000	140.000	189.000	229.000
MAY	123.800	125.800	217.000	167.400
JUL	118.000	164.000	177.000	163.000
SEP	130.000	130.000	214.000	241.000
NOV	134.300	136.900	.	.
IONCAL (DIMNSLESS)			DET'N LIMIT = N/A	GUIDELINE = N/A
JAN	.093	1.436	.670	2.327
MAR	3.848	1.238	2.126	1.942
MAY	1.565	1.994	2.459	4.201
JUL	2.347	1.294	1.531	1.081
SEP	3.405	3.792	2.740	3.358
NOV	5.225	5.522	.	.
LANGELIERS INDEX (DIMNSLESS)			DET'N LIMIT = N/A	GUIDELINE = N/A
JAN	.446	.432	.448	.617
MAR	.443	.335	.633	.844
MAY	.241	.146	.632	.396
JUL	.317	.612	.678	.616
SEP	.515	.398	.859	.980
NOV	.384	.324	.	.
MAGNESIUM (MG/L)			DET'N LIMIT = 0.1	GUIDELINE = 30 (F2)
JAN	8.500	8.500	8.550	10.000
MAR	8.800	9.200	12.300	14.900
MAY	8.750	8.800	14.750	11.800
JUL	8.700	11.800	12.500	11.700
SEP	9.000	8.900	14.500	16.100
NOV	9.150	9.100	.	.
SODIUM (MG/L)			DET'N LIMIT = 0.2	GUIDELINE = 200 (A4)
JAN	8.000	8.100	8.000	7.600
MAR	8.200	7.800	7.200	6.400
MAY	8.300	8.200	6.300	7.100
JUL	8.400	7.400	7.600	7.400
SEP	7.800	7.800	6.200	5.600
NOV	8.500	8.700	.	.
AMMONIUM TOTAL (MG/L)			DET'N LIMIT = 0.002	GUIDELINE = 0.05 (F2)
JAN	BDL	BDL	.010	BDL
MAR	BDL	BDL	BDL	BDL
MAY	.014	BDL	.004 <T	BDL
JUL	.012	.006 <T	.006 <T	.006 <T
SEP	BDL	BDL	.006 <T	BDL
NOV	.010	.010	.	.
NITRITE (MG/L)			DET'N LIMIT = 0.001	GUIDELINE = 1 (A1)
JAN	.007	.001 <T	.001 <T	.001 <T
MAR	.002 <T	.001 <T	.002 <T	.001 <T
MAY	.004 <T	BDL	.001 <T	.001 <T
JUL	.004 <T	.002 <T	.001 <T	.001 <T
SEP	.001 <T	BDL	BDL	BDL
NOV	.006	.006	.	.

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER WSS 1990

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 2	
			STANDING	FREE FLOW
TOTAL NITRATES (MG/L)			**DET'N LIMIT = 0.005**	**GUIDELINE = 10 (A1)**
JAN	.285	.610	.380	.740
MAR	.170	.280	.775	1.240
MAY	.255	.285	1.400	.825
JUL	.115	.715	.770	.665
SEP	.125	.230	1.100	1.410
NOV	.205	.215	.	.
NITROGEN TOT KJELD (MG/L)			**DET'N LIMIT = 0.02**	**GUIDELINE = N/A**
JAN	.170	.190	.240	.180
MAR	.310	.200	.290	.140
MAY	.230	.160	.220	.140
JUL	.290	.200	.270	.170
SEP	.220	.160	.190	.090 <T
NOV	.260	.180	.	.
PH (DIMNSLESS)			**DET'N LIMIT = N/A**	**GUIDELINE = 6.5-8.5(A4)**
JAN	8.270	8.240	8.270	8.340
MAR	8.290	8.160	8.210	8.260
MAY	8.140	8.050	8.080	8.060
JUL	8.270	8.310	8.320	8.320
SEP	8.400	8.300	8.340	8.360
NOV	8.230	8.170	.	.
PHOSPHORUS FIL REACT (MG/L)			**DET'N LIMIT = 0.0005**	**GUIDELINE = N/A**
JAN	.012	BDL	.	.
MAR	.001 <T	BDL	.	.
MAY	.000 <T	BDL	.	.
JUL	BDL	BDL	.	.
SEP	BDL	BDL	.	.
NOV	.000 <T	BDL	.	.
PHOSPHORUS TOTAL (MG/L)			**DET'N LIMIT = 0.002**	**GUIDELINE = .40 (F2)**
JAN	.035	.002 <T	.	.
MAR	.060	.004 <T	.	.
MAY	.015	BDL	.	.
JUL	.010	.005 <T	.	.
SEP	.020	.003 <T	.	.
NOV	.048	BDL	.	.
SULPHATE (MG/L)			**DET'N LIMIT = .200**	**GUIDELINE = 500 (A3)**
JAN	23.080	25.840	24.370	29.800
MAR	23.990	26.410	40.200	50.440
MAY	24.190	24.940	49.200	36.930
JUL	23.190	34.980	36.670	34.370
SEP	23.310	23.840	44.890	51.210
NOV	23.640	24.210	.	.
TURBIDITY (FTU)			**DET'N LIMIT = 0.05**	**GUIDELINE = 1 (A1)**
JAN	41.000	.660	1.200	.470
MAR	10.000	.320	1.100	.520
MAY	3.900	.280	.940	.570
JUL	1.100	.530	.500	.430
SEP	2.700	.390	.810	.650
NOV	19.000	.220 <T	.	.

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER WSS 1990

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 2	
			STANDING	FREE FLOW
METALS				
ALUMINUM (UG/L)			DET'N LIMIT = 0.10	GUIDELINE = 100 (A4)
JAN	280.000	36.000	32.000	31.000
MAR	83.000	66.000	39.000	34.000
MAY	56.000	170.000	73.000	74.000
JUL	16.000	270.000	190.000	220.000
SEP	53.000	210.000	78.000	73.000
NOV	120.000	77.000	.	.
ARSENIC (UG/L)			DET'N LIMIT = 0.10	GUIDELINE = 25 (A1)
JAN	.930 <T	.300 <T	.380 <T	.420 <T
MAR	.800 <T	.190 <T	.300 <T	.220 <T
MAY	.580 <T	.410 <T	.570 <T	.560 <T
JUL	.820 <T	.710 <T	.350 <T	.480 <T
SEP	.980 <T	.470 <T	.490 <T	.500 <T
NOV	.930 <T	.280 <T	.	.
BARIUM (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = 1000 (A2)
JAN	27.000	21.000	29.000	30.000
MAR	23.000	21.000	38.000	43.000
MAY	23.000	22.000	59.000	44.000
JUL	22.000	41.000	45.000	42.000
SEP	23.000	22.000	59.000	65.000
NOV	21.000	19.000	.	.
BORON (UG/L)			DET'N LIMIT = 2.00	GUIDELINE = 5000 (A1)
JAN	33.000	23.000	33.000	33.000
MAR	26.000	25.000	23.000	22.000
MAY	72.000	67.000	100.000	79.000
JUL	33.000	30.000	34.000	33.000
SEP	39.000	37.000	41.000	47.000
NOV	23.000	22.000	.	.
BERYLLIUM (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = 6800 (D4)
JAN	.110 <T	BDL	BDL	.080 <T
MAR	BDL	BDL	BDL	BDL
MAY	.060 <T	BDL	.080 <T	.120 <T
JUL	BDL	BDL	BDL	BDL
SEP	BDL	BDL	.090 <T	.060 <T
NOV	BDL	BDL	.	.
CADMIUM (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = 5 (A1)
JAN	BDL	BDL	BDL	BDL
MAR	BDL	BDL	BDL	BDL
MAY	BDL	BDL	.110 <T	BDL
JUL	BDL	BDL	BDL	BDL
SEP	BDL	BDL	BDL	BDL
NOV	BDL	.060 <T	.	.
COBALT (UG/L)			DET'N LIMIT = 0.02	GUIDELINE = N/A
JAN	.440 <T	.060 <T	.110 <T	.150 <T
MAR	.220 <T	.050 <T	.040 <T	BDL
MAY	.240 <T	.230 <T	.120 <T	.100 <T
JUL	.090 <T	BDL	BDL	BDL
SEP	.140 <T	.160 <T	.090 <T	.050 <T
NOV	.260 <T	.070 <T	.	.

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER WSS 1990

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 2	
			STANDING	FREE FLOW
CHROMIUM (UG/L)			DET'N LIMIT = 0.50	GUIDELINE = 50 (A1)
JAN	4.300 <T	.680 <T	3.800 <T	4.600 <T
MAR	1.300 <T	4.600 <T	1.800 <T	1.900 <T
MAY	3.000 <T	2.700 <T	5.100	3.700 <T
JUL	1.700 <T	2.000 <T	2.500 <T	2.100 <T
SEP	3.900 <T	3.500 <T	6.000	7.200
NOV	1.600 <T	1.000 <T	.	.
COPPER (UG/L)			DET'N LIMIT = 0.50	GUIDELINE = 1000 (A3)
JAN	1.900 <T	.800 <T	17.000	2.400 <T
MAR	2.000 <T	.810 <T	29.000	3.600 <T
MAY	2.200 <T	.990 <T	33.000	10.000
JUL	1.200 <T	1.400 <T	21.000	12.000
SEP	1.300 <T	.850 <T	20.000	5.200
NOV	1.300 <T	.750 <T	.	.
IRON (UG/L)			DET'N LIMIT = 6.00	GUIDELINE = 300 (A3)
JAN	550.000	BDL	34.000 <T	43.000 <T
MAR	200.000	BDL	41.000 <T	74.000
MAY	76.000	BDL	62.000	61.000
JUL	19.000 <T	62.000	55.000 <T	51.000 <T
SEP	95.000	BDL	100.000	50.000 <T
NOV	260.000	BDL	.	.
MERCURY (UG/L)			DET'N LIMIT = 0.02	GUIDELINE = 1 (A1)
JAN	BDL	BDL	.	.
MAR	BDL	BDL	.	.
MAY	BDL	BDL	.	.
JUL	BDL	BDL	.	.
SEP	BDL	BDL	.	.
NOV	.080 <T	BDL	.	.
MANGANESE (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = 50 (A3)
JAN	43.000	.790	2.300	5.500
MAR	31.000	.210 <T	2.400	5.900
MAY	7.300	.370 <T	5.400	6.000
JUL	3.700	2.600	3.200	4.400
SEP	11.000	.270 <T	3.100	5.000
NOV	24.000	.320 <T	.	.
MOLYBDENUM (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = N/A
JAN	.660	1.200	1.100	1.000
MAR	.910	1.000	.860	.640
MAY	1.100	1.300	.740	1.000
JUL	1.500	1.000	1.000	1.100
SEP	1.100	1.200	.770	.820
NOV	.810	1.100	.	.
NICKEL (UG/L)			DET'N LIMIT = 0.20	GUIDELINE = 350 (D3)
JAN	1.200 <T	.350 <T	.900 <T	.440 <T
MAR	.450 <T	BDL	BDL	BDL
MAY	1.500 <T	.980 <T	1.600 <T	.880 <T
JUL	BDL	BDL	BDL	BDL
SEP	.720 <T	.760 <T	14.000	.240 <T
NOV	1.200 <T	.590 <T	.	.

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DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER WSS 1990

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 2	
			STANDING	FREE FLOW
LEAD (UG/L)			**DET'N LIMIT = 0.05**	**GUIDELINE = 10. (A1)**
JAN	.990	.080 <T	1.200	.150 <T
MAR	1.200	.070 <T	2.600	.270 <T
MAY	.230 <T	BDL	3.000	.150 <T
JUL	.090 <T	.170 <T	2.100	.230 <T
SEP	.180 <T	BDL	.870	.220 <T
NOV	.350 <T	.110 <T	.	.
ANTIMONY (UG/L)			**DET'N LIMIT = 0.05**	**GUIDELINE = 146 (D4)**
JAN	.440 <T	.380 <T	.450 <T	.540
MAR	.420 <T	.420 <T	.430 <T	.370 <T
MAY	.460 <T	.480 <T	.540	.550
JUL	.450 <T	.300 <T	.320 <T	.420 <T
SEP	.480 <T	.540	.470 <T	.380 <T
NOV	.400 <T	.440 <T	.	.
SELENIUM (UG/L)			**DET'N LIMIT = 1.00**	**GUIDELINE = 10 (A1)**
JAN	BDL	1.200 <T	BDL	1.500 <T
MAR	BDL	BDL	BDL	BDL
MAY	BDL	1.600 <T	BDL	1.500 <T
JUL	BDL	1.800 <T	1.300 <T	1.100 <T
SEP	BDL	1.700 <T	1.100 <T	1.600 <T
NOV	BDL	BDL	.	.
STRONTIUM (UG/L)			**DET'N LIMIT = 0.10**	**GUIDELINE = N/A**
JAN	180.000	180.000	170.000	190.000
MAR	160.000	150.000	150.000	170.000
MAY	160.000	160.000	180.000	150.000
JUL	170.000	180.000	180.000	170.000
SEP	170.000	160.000	180.000	190.000
NOV	160.000	140.000	.	.
TITANIUM (UG/L)			**DET'N LIMIT = 0.50**	**GUIDELINE = N/A**
JAN	9.700	2.700 <T	3.000 <T	3.900 <T
MAR	5.700	1.800 <T	6.600	8.300
MAY	6.600	5.300	15.000	11.000
JUL	3.900 <T	8.700	8.300	7.100
SEP	4.700 <T	3.100 <T	7.200	8.200
NOV	7.500	1.900 <T	.	.
THALLIUM (UG/L)			**DET'N LIMIT = 0.05**	**GUIDELINE = 13 (D4)**
JAN	.100 <T	.090 <T	BDL	BDL
MAR	BDL	BDL	BDL	BDL
MAY	BDL	BDL	BDL	BDL
JUL	BDL	BDL	BDL	BDL
SEP	BDL	BDL	BDL	BDL
NOV	BDL	BDL	.	.
URANIUM (UG/L)			**DET'N LIMIT = 0.05**	**GUIDELINE = 100 (A1)**
JAN	.370 <T	.090 <T	.120 <T	.150 <T
MAR	.340 <T	.060 <T	.360 <T	.430 <T
MAY	.330 <T	.170 <T	.530	.400 <T
JUL	.320 <T	.360 <T	.400 <T	.420 <T
SEP	.360 <T	.150 <T	.550	.700
NOV	.320 <T	.130 <T	.	.

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER WSS 1990

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM		
	RAW	TREATED	SITE 2		
			STANDING	FREE FLOW	
VANADIUM (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = N/A	
JAN	.990	.190 <T	.160 <T	.170 <T	
MAR	.400 <T	.090 <T	.070 <T	.130 <T	
MAY	.280 <T	.110 <T	.180 <T	.110 <T	
JUL	.240 <T	.240 <T	.190 <T	.140 <T	
SEP	.330 <T	.200 <T	.220 <T	.200 <T	
NOV	.480 <T	.090 <T	.	.	
ZINC (UG/L)			DET'N LIMIT = 0.20	GUIDELINE = 5000	(A3)
JAN	3.800	1.100 <T	11.000	2.200	
MAR	2.600	8.900	16.000	1.800 <T	
MAY	2.200	1.300 <T	15.000	1.900 <T	
JUL	1.500 <T	2.100	13.000	2.400	
SEP	2.000 <T	1.100 <T	12.000	1.800 <T	
NOV	3.100	2.000 <T	.	.	

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER WSS 1990

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 2	
			STANDING	FREE FLOW
PHENANTHRENE (NG/L PAH)			DET'N LIMIT = 10.	GUIDELINE = N/A
JAN	BDL	BDL	.	.
MAR	BDL	BDL	.	.
MAY	BDL	BDL	.	.
JUL	BDL	BDL	.	48.000 <T
SEP	BDL	BDL	.	.
NOV	BDL	BDL	.	.

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER WSS 1990

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 2	
			STANDING	FREE FLOW
PESTICIDES & PCB				
ALPHA BHC (NG/L)			DET'N LIMIT = 1.000	GUIDELINE = 700 (G)
JAN	1.000 <T	1.000 <T	.	2.000 <T
MAR	BDL	BDL	.	BDL
MAY	3.000 <T	1.000 <T	.	1.000 <T
JUL	2.000 <T	BDL	.	1.000 <T
SEP	BDL	BDL	.	BDL
NOV	BDL	1.000 <T	.	.
LINDANE (NG/L)			DET'N LIMIT = 1.000	GUIDELINE = 4000 (A1)
JAN	BDL	BDL	.	BDL
MAR	BDL	BDL	.	BDL
MAY	1.000 <T	BDL	.	BDL
JUL	BDL	BDL	.	BDL
SEP	BDL	BDL	.	BDL
NOV	BDL	BDL	.	.
ATRAZINE (NG/L)			DET'N LIMIT = 50	GUIDELINE = 60000 (A2)
JAN	BDL	BDL	.	.
MAR	BDL	BDL	.	.
MAY	BDL	BDL	.	.
JUL	80.000 <T	140.000 <T	.	.
SEP	BDL	BDL	.	.
NOV	BDL	BDL	.	.

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER WSS 1990

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM		
	RAW	TREATED	SITE 2		
			STANDING	FREE FLOW	
PHENOLICS (UG/L PHENOLICS)			DET'N LIMIT = .200	GUIDELINE = 2	(A4)
JAN	1.200	1.000	.	.	
MAR	.800 <T	.400 <T	.	.	
MAY	BDL	BDL	.	.	
JUL	.400 <T	.600 <T	.	.	
SEP	BDL	.800 <T	.	.	
NOV	1.000	BDL	.	.	

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER WSS 1990

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 2	
			STANDING	FREE FLOW
VOLATILES				
BENZENE (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = 5 (A1)
JAN	BDL	BDL	.	BDL
MAR	BDL	.050 <T	.	BDL
MAY	BDL	.050 <T	.	.050 <T
JUL	BDL	BDL	.	.050 <T
SEP	BDL	BDL	.	BDL
NOV	BDL	BDL	.	.
TOLUENE (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = 24 (A3)
JAN	BDL	.050 <T	.	.050 <T
MAR	BDL	.100 <T	.	.050 <T
MAY	BDL	.100 <T	.	.100 <T
JUL	BDL	.100 <T	.	.100 <T
SEP	BDL	.050 <T	.	BDL
NOV	BDL	BDL	.	.
ETHYLBENZENE (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = 2.4 (A3)
JAN	BDL	BDL	.	BDL
MAR	BDL	.050 <T	.	.100 <T
MAY	BDL	.100 <T	.	.100 <T
JUL	BDL	BDL	.	.100 <T
SEP	BDL	BDL	.	.050 <T
NOV	BDL	BDL	.	.
M-XYLENE (UG/L)			DET'N LIMIT = 0.10	GUIDELINE = 300 (A3*)
JAN	BDL	BDL	.	BDL
MAR	BDL	BDL	.	BDL
MAY	BDL	.100 <T	.	BDL
JUL	BDL	BDL	.	BDL
SEP	BDL	BDL	.	BDL
NOV	BDL	BDL	.	.
O-XYLENE (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = 300 (A3*)
JAN	BDL	BDL	.	BDL
MAR	BDL	BDL	.	BDL
MAY	BDL	.050 <T	.	BDL
JUL	BDL	BDL	.	BDL
SEP	BDL	BDL	.	BDL
NOV	BDL	BDL	.	.
STYRENE (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = 100 (D1)
JAN	BDL	BDL	.	.100 <T
MAR	BDL	.050 <T	.	.100 <T
MAY	BDL	.050 <T	.	.100 <T
JUL	BDL	BDL	.	.200 <T
SEP	BDL	BDL	.	.100 <T
NOV	BDL	BDL	.	.

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER WSS 1990

	WATER TREATMENT PLANT		DISTRIBUTION SYSTEM	
	RAW	TREATED	SITE 2	
			STANDING	FREE FLOW
CHLOROFORM (UG/L)			**DET'N LIMIT = 0.10**	**GUIDELINE = 350 (A1+)**
JAN	.200 <T	26.600	.	19.600
MAR	.700 <T	25.200	.	19.800
MAY	.300 <T	32.000	.	26.900
JUL	.200 <T	31.000	.	21.800
SEP	.400 <T	24.400	.	19.100
NOV	.300 <T	16.600	.	.
DICHLOROBROMOMETHANE (UG/L)			**DET'N LIMIT = 0.05**	**GUIDELINE = 350 (A1+)**
JAN	.150 <T	11.300	.	9.800
MAR	.450 <T	10.550	.	8.250
MAY	BDL	13.700	.	10.950
JUL	.050 <T	12.050	.	10.200
SEP	.250 <T	10.450	.	9.200
NOV	.150 <T	9.900	.	.
CHLORODIBROMOMETHANE (UG/L)			**DET'N LIMIT = 0.10**	**GUIDELINE = 350 (A1+)**
JAN	BDL	3.000	.	3.200
MAR	.300 <T	3.500	.	2.700
MAY	BDL	5.600	.	3.900
JUL	BDL	4.800	.	4.300
SEP	.200 <T	4.400	.	3.400
NOV	.100 <T	4.200	.	.
BROMOFORM (UG/L)			**DET'N LIMIT = 0.20**	**GUIDELINE = 350 (A1+)**
JAN	BDL	BDL	.	BDL
MAR	BDL	.200 <T	.	BDL
MAY	BDL	.400 <T	.	.200 <T
JUL	BDL	.400 <T	.	.400 <T
SEP	BDL	.400 <T	.	.200 <T
NOV	BDL	.400 <T	.	.
TOTAL TRIHALOMETHANES (UG/L)			**DET'N LIMIT = 0.50**	**GUIDELINE = 350 (A1+)**
JAN	BDL	40.850	.	32.650
MAR	1.450 <T	39.450	.	30.750
MAY	BDL	51.700	.	42.050
JUL	BDL	48.250	.	36.700
SEP	.750 <T	39.600	.	31.950
NOV	.550 <T	31.200	.	.

TRACE LEVELS OF TOLUENE ARE LABORATORY ARTIFACTS DERIVED FROM THE ANALYTICAL METHODOLOGY.

TRACE LEVELS OF STYRENE ARE CONSIDERED TO BE LABORATORY ARTIFACTS RESULTING FROM THE LABORATORY SHIPPING CONTAINERS.

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER (DOANS HOLLOW) SPRING SUPPLY 1990

DOANS HOLLOW SPRING SUPPLY

	RAW	TREATED		
BACTERIOLOGICAL				
FECAL COLIFORM MF (CT/100ML)			DET'N LIMIT = 0	GUIDELINE = 0 (A1)
JAN	18	.		
MAR	6	.		
JUL	22	.		
SEP	28	.		
NOV	58	.		
STANDRD PLATE CNT MF (COUNT/ML)			DET'N LIMIT = 0	GUIDELINE = 500/ML (A3)
JAN	.	68		
MAR	.	14		
JUL	.	16		
SEP	.	20		
NOV	.	10		
TOTAL COLIFORM MF (CT/100ML)			DET'N LIMIT = 0	GUIDELINE = 5/100ML(A1)
JAN	5300	.		
MAR	100	.		
JUL	210	.		
SEP	260	.		
NOV	220	.		
T COLIFORM BCKGRD MF (CT/100ML)			DET'N LIMIT = 0	GUIDELINE = N/A
JAN	10900	.		
MAR	4900	.		
JUL	19000	.		
SEP	9800	.		
NOV	5700	.		

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER (DOANS HOLLOW) SPRING SUPPLY 1990

DOANS HOLLOW SPRING SUPPLY

	RAW	TREATED		
CHEMISTRY (FLD)				
FLD CHLORINE (COMB) (MG/L)			DET'N LIMIT = 0	GUIDELINE = N/A
JAN	.	.200		
MAR	.	.300		
MAY	.	.300		
JUL	.	.100		
SEP	.	.200		
NOV	.	.200		
FLD CHLORINE FREE (MG/L)			DET'N LIMIT = 0	GUIDELINE = N/A
JAN	.	1.300		
MAR	.	1.000		
MAY	.	1.000		
JUL	.	1.600		
SEP	.	1.400		
NOV	.	1.700		
FLD CHLORINE (TOTAL) (MG/L)			DET'N LIMIT = 0	GUIDELINE = N/A
JAN	.	1.500		
MAR	.	1.300		
MAY	.	1.300		
JUL	.	1.700		
SEP	.	1.600		
NOV	.	1.900		
FLD PH (DIMNSLESS)			DET'N LIMIT = N/A	GUIDELINE = 6.5-8.5(A4)
JAN	7.500	7.500		
MAR	7.500	7.900		
MAY	7.500	7.900		
JUL	7.700	7.900		
SEP	7.700	7.700		
NOV	7.700	7.900		
FLD TEMPERATURE (DEG.C)			DET'N LIMIT = N/A	GUIDELINE = 15 (A3)
JAN	7.500	7.500		
MAR	8.500	8.900		
MAY	11.000	11.000		
JUL	14.000	14.000		
SEP	11.000	11.000		
NOV	9.000	9.000		
FLD TURBIDITY (FTU)			DET'N LIMIT = N/A	GUIDELINE = 1 (A1)
JAN	.890	.890		
MAR	.740	.680		
MAY	.950	.850		
JUL	1.200	.960		
SEP	.450	.430		
NOV	.800	.500		

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER (DOANS HOLLOW) SPRING SUPPLY 1990

DOANS HOLLOW SPRING SUPPLY

	RAW	TREATED		
CHEMISTRY (LAB)				
ALKALINITY (MG/L)			DET'N LIMIT = 0.2	GUIDELINE = 30-500 (A4)
JAN	193.600	194.200		
MAR	195.300	196.700		
MAY	197.000	197.900		
JUL	200.100	199.900		
SEP	198.300	198.600		
NOV	200.200	201.300		
CALCIUM (MG/L)			DET'N LIMIT = 0.2	GUIDELINE = 100 (F2)
JAN	76.400	76.100		
MAR	80.400	80.600		
MAY	74.900	75.100		
JUL	76.000	78.600		
SEP	81.400	81.000		
NOV	80.400	82.300		
CHLORIDE (MG/L)			DET'N LIMIT = 0.2	GUIDELINE = 250 (A3)
JAN	11.000	12.300		
MAR	8.200	9.500		
MAY	7.200	8.700		
JUL	6.700	8.700		
SEP	6.400	8.200		
NOV	7.000	8.200		
COLOUR (HZU)			DET'N LIMIT = 0.5	GUIDELINE = 5 (A3)
JAN	4.500	4.000		
MAR	4.000	3.500		
MAY	4.000	3.500		
JUL	2.500	2.500		
SEP	3.500	3.000		
NOV	3.500	2.500		
CONDUCTIVITY (UMHO/CM)			DET'N LIMIT = 1.	GUIDELINE = 400 (F2)
JAN	512	516		
MAR	507	515		
MAY	511	516		
JUL	514	520		
SEP	512	518		
NOV	513	520		
DISS ORG CARBON (MG/L)			DET'N LIMIT = .100	GUIDELINE = 5.0 (A3)
JAN	1.000	1.100		
MAR	1.000	1.000		
MAY	.800	1.000		
JUL	.700	.800		
SEP	.800	.800		
NOV	.800	.800		
FLUORIDE (MG/L)			DET'N LIMIT = 0.01	GUIDELINE = 2.4 (A1)
JAN	.100	.100		
MAR	.080	.080		
MAY	.080	.100		
JUL	.100	.080		
SEP	.060	.060		
NOV	.100	.100		

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER (DOANS HOLLOW) SPRING SUPPLY 1990

DOANS HOLLOW SPRING SUPPLY

	RAW	TREATED		
HARDNESS (MG/L)			DET'N LIMIT = 0.5	GUIDELINE = 80-100 (A4)
JAN	262.000	261.000		
MAR	276.000	276.000		
MAY	264.200	264.600		
JUL	268.000	275.000		
SEP	281.000	279.000		
NOV	278.400	286.400		
IONCAL (DMNSLESS)			DET'N LIMIT = N/A	GUIDELINE = N/A
JAN	2.529	3.614		
MAR	2.042	1.463		
MAY	2.420	2.461		
JUL	1.861	1.150		
SEP	3.418	2.606		
NOV	4.373	4.449		
LANGELIERS INDEX (DMNSLESS)			DET'N LIMIT = N/A	GUIDELINE = N/A
JAN	1.118	1.197		
MAR	1.044	1.018		
MAY	.737	.810		
JUL	1.060	1.103		
SEP	1.116	1.124		
NOV	.995	1.046		
MAGNESIUM (MG/L)			DET'N LIMIT = 0.10	GUIDELINE = 30 (F2)
JAN	17.200	17.100		
MAR	18.300	18.200		
MAY	18.750	18.700		
JUL	19.000	19.100		
SEP	18.800	18.600		
NOV	18.850	19.650		
SODIUM (MG/L)			DET'N LIMIT = 0.2	GUIDELINE = 200 (A4)
JAN	6.200	7.000		
MAR	4.200	5.200		
MAY	3.800	5.100		
JUL	3.600	5.400		
SEP	3.600	4.800		
NOV	3.700	4.800		
AMMONIUM TOTAL (MG/L)			DET'N LIMIT = 0.002	GUIDELINE = 0.05 (F2)
JAN	BDL	BDL		
MAR	BDL	BDL		
MAY	BDL	BDL		
JUL	.008 <T	.006 <T		
SEP	.002 <T	BDL		
NOV	.010	.002 <T		
NITRITE (MG/L)			DET'N LIMIT = 0.001	GUIDELINE = 1 (A1)
JAN	.009	.001 <T		
MAR	.013	.001 <T		
MAY	.011	.001 <T		
JUL	.013	BDL		
SEP	.011	.001 <T		
NOV	.008	.009		

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER (DOANS HOLLOW) SPRING SUPPLY 1990

DOANS HOLLOW SPRING SUPPLY

	RAW	TREATED		
TOTAL NITRATES (MG/L)			DET'N LIMIT = 0.005	GUIDELINE = 10 (A1)
JAN	2.220	2.220		
MAR	1.750	1.760		
MAY	1.910	1.920		
JUL	2.050	2.070		
SEP	1.930	1.910		
NOV	.230	2.020		
NITROGEN TOT KJELD (MG/L)			DET'N LIMIT = 0.02	GUIDELINE = N/A
JAN	.250	.120		
MAR	.170	.170		
MAY	.120	.090 <T		
JUL	.120	.090 <T		
SEP	.060 <T	.050 <T		
NOV	.140	.120		
PH (DIMNSLESS)			DET'N LIMIT = N/A	GUIDELINE = 6.5-8.5(A4)
JAN	8.410	8.490		
MAR	8.310	8.280		
MAY	8.030	8.100		
JUL	8.340	8.370		
SEP	8.370	8.380		
NOV	8.250	8.290		
PHOSPHORUS FIL REACT (MG/L)			DET'N LIMIT = 0.0005	GUIDELINE = N/A
JAN	.001 <T	.007		
MAR	.000 <T	.002 <T		
MAY	.000 <T	.002		
JUL	.000 <T	.001 <T		
SEP	BDL	.002 <T		
NOV	.000 <T	.002		
PHOSPHORUS TOTAL (MG/L)			DET'N LIMIT = 0.002	GUIDELINE = .40 (F2)
JAN	.011	.011		
MAR	.007 <T	.008 <T		
MAY	.002 <T	.003 <T		
JUL	.004 <T	.005 <T		
SEP	.005 <T	.005 <T		
NOV	.004 <T	.007 <T		
SULPHATE (MG/L)			DET'N LIMIT = .200	GUIDELINE = 500 (A3)
JAN	62.270	63.350		
MAR	63.670	64.210		
MAY	62.460	62.700		
JUL	61.460	61.190		
SEP	62.050	62.240		
NOV	60.940	61.480		
TURBIDITY (FTU)			DET'N LIMIT = 0.05	GUIDELINE = 1 (A1)
JAN	1.300	1.600		
MAR	.920	1.400		
MAY	.720	.990		
JUL	.610	.990		
SEP	.620	1.200		
NOV	.700	1.800		

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER (DOANS HOLLOW) SPRING SUPPLY 1990

DOANS HOLLOW SPRING SUPPLY

	RAW	TREATED		
METALS				
ALUMINUM (UG/L)			DET'N LIMIT = 0.10	GUIDELINE = 100 (A4)
JAN	16.000	17.000		
MAR	7.900	8.100		
MAY	28.000	28.000		
JUL	9.500	10.000		
SEP	5.500	5.400		
NOV	3.100	4.500		
ARSENIC (UG/L)			DET'N LIMIT = 0.10	GUIDELINE = 25 (A1)
JAN	.560 <T	.550 <T		
MAR	.390 <T	.500 <T		
MAY	.590 <T	.640 <T		
JUL	.510 <T	.670 <T		
SEP	.580 <T	.560 <T		
NOV	.180 <T	.120 <T		
BARIUM (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = 1000 (A2)
JAN	74.000	75.000		
MAR	70.000	72.000		
MAY	85.000	82.000		
JUL	91.000	91.000		
SEP	86.000	85.000		
NOV	82.000	80.000		
BORON (UG/L)			DET'N LIMIT = 2.00	GUIDELINE = 5000 (A1)
JAN	15.000 <T	18.000 <T		
MAR	22.000	21.000		
MAY	84.000	89.000		
JUL	32.000	27.000		
SEP	39.000	39.000		
NOV	12.000 <T	13.000 <T		
BERYLLIUM (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = 6800 (D4)
JAN	BDL	BDL		
MAR	BDL	BDL		
MAY	.110 <T	.100 <T		
JUL	BDL	BDL		
SEP	BDL	BDL		
NOV	BDL	BDL		
COBALT (UG/L)			DET'N LIMIT = 0.02	GUIDELINE = N/A
JAN	.100 <T	.100 <T		
MAR	BDL	BDL		
MAY	.210 <T	.190 <T		
JUL	BDL	BDL		
SEP	.070 <T	.100 <T		
NOV	.070 <T	.100 <T		
CHROMIUM (UG/L)			DET'N LIMIT = 0.50	GUIDELINE = 50 (A1)
JAN	BDL	1.100 <T		
MAR	2.600 <T	2.200 <T		
MAY	4.600 <T	4.700 <T		
JUL	3.200 <T	2.500 <T		
SEP	5.800	5.900		
NOV	BDL	BDL		

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER (DOANS HOLLOW) SPRING SUPPLY 1990

DOANS HOLLOW SPRING SUPPLY

	RAW	TREATED		
COPPER (UG/L)			DET'N LIMIT = 0.50	GUIDELINE = 1000 (A3)
JAN	BDL	58.000		
MAR	.550 <T	33.000		
MAY	BDL	44.000		
JUL	BDL	100.000		
SEP	BDL	51.000		
NOV	BDL	40.000		
IRON (UG/L)			DET'N LIMIT = 6.00	GUIDELINE = 300 (A3)
JAN	76.000	81.000		
MAR	70.000	74.000		
MAY	71.000	74.000		
JUL	75.000	96.000		
SEP	66.000	68.000		
NOV	66.000	78.000		
MERCURY (UG/L)			DET'N LIMIT = 0.02	GUIDELINE = 1 (A1)
JAN	BDL	.050 <T		
MAR	BDL	BDL		
MAY	BDL	BDL		
JUL	.060 <T	BDL		
SEP	BDL	BDL		
NOV	ICS	BDL		
MANGANESE (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = 50 (A3)
JAN	24.000	24.000		
MAR	27.000	27.000		
MAY	26.000	25.000		
JUL	22.000	30.000		
SEP	24.000	23.000		
NOV	20.000	20.000		
MOLYBDENUM (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = N/A
JAN	.480 <T	.510		
MAR	.450 <T	.380 <T		
MAY	.590	.490 <T		
JUL	.530	.600		
SEP	.560	.560		
NOV	.470 <T	.520		
NICKEL (UG/L)			DET'N LIMIT = 0.20	GUIDELINE = 350 (D3)
JAN	BDL	BDL		
MAR	BDL	BDL		
MAY	BDL	.310 <T		
JUL	BDL	BDL		
SEP	BDL	BDL		
NOV	BDL	BDL		
LEAD (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = 10. (A1)
JAN	BDL	.170 <T		
MAR	.220 <T	.070 <T		
MAY	.070 <T	BDL		
JUL	.090 <T	.210 <T		
SEP	.130 <T	.060 <T		
NOV	BDL	.210 <T		

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER (DOANS HOLLOW) SPRING SUPPLY 1990

DOANS HOLLOW SPRING SUPPLY

	RAW	TREATED		
ANTIMONY (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = 146 (D4)
JAN	.270 <T	.110 <T		
MAR	.210 <T	.260 <T		
MAY	.340 <T	.390 <T		
JUL	.320 <T	.280 <T		
SEP	.480 <T	.390 <T		
NOV	.360 <T	.350 <T		
STRONTIUM (UG/L)			DET'N LIMIT = 0.10	GUIDELINE = N/A
JAN	240.000	230.000		
MAR	160.000	170.000		
MAY	160.000	160.000		
JUL	170.000	170.000		
SEP	170.000	170.000		
NOV	190.000	190.000		
TITANIUM (UG/L)			DET'N LIMIT = 0.50	GUIDELINE = N/A
JAN	11.000	10.000		
MAR	10.000	10.000		
MAY	19.000	18.000		
JUL	17.000	17.000		
SEP	9.600	9.500		
NOV	13.000	13.000		
URANIUM (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = 100 (A1)
JAN	.670	.720		
MAR	.710	.740		
MAY	.760	.780		
JUL	.750	.800		
SEP	.810	.770		
NOV	.760	.740		
VANADIUM (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = N/A
JAN	.270 <T	.250 <T		
MAR	.120 <T	.120 <T		
MAY	.210 <T	.170 <T		
JUL	.190 <T	.160 <T		
SEP	.130 <T	.120 <T		
NOV	.060 <T	.060 <T		
ZINC (UG/L)			DET'N LIMIT = 0.20	GUIDELINE = 5000 (A3)
JAN	3.100	3.000		
MAR	3.800	2.600		
MAY	2.500	2.900		
JUL	2.600	4.100		
SEP	2.000 <T	2.900		
NOV	3.400	7.500		

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER (DOANS HOLLOW) SPRING SUPPLY 1990

DOANS HOLLOW SPRING SUPPLY

PESTICIDES & PCB

ATRAZINE (NG/L) DET'N LIMIT = 50 GUIDELINE = 60000 (A2)

	RAW	TREATED
JAN	BDL	BDL
MAR	ILA	BDL
MAY	150.000 <T	150.000 <T
JUL	BDL	BDL
SEP	BDL	BDL
NOV	BDL	BDL

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER (DOANS HOLLOW) SPRING SUPPLY 1990

DOANS HOLLOW SPRING SUPPLY

PHENOLICS (UG/L)	RAW	TREATED
	PHENOLICS	
JAN	.400 <T	BDL
MAR	.600 <T	BDL
MAY	BDL	BDL
JUL	.400 <T	.400 <T
SEP	BDL	.400 <T
NOV	BDL	BDL

DET'N LIMIT = .200 GUIDELINE = 2 (A4)

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER (DOANS HOLLOW) SPRING SUPPLY 1990

DOANS HOLLOW SPRING SUPPLY

	RAW	TREATED		
VOLATILES				
BENZENE (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = 5 (A1)
JAN	BDL	BDL		
MAR	BDL	.100 <T		
MAY	BDL	BDL		
JUL	BDL	BDL		
SEP	BDL	BDL		
NOV	BDL	BDL		
TOLUENE (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = 24 (A3)
JAN	BDL	BDL		
MAR	BDL	BDL		
MAY	BDL	BDL		
JUL	.100 <T	.200 <T		
SEP	BDL	BDL		
NOV	BDL	BDL		
ETHYLBENZENE (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = 2.4 (A3)
JAN	BDL	BDL		
MAR	.050 <T	.200 <T		
MAY	BDL	.050 <T		
JUL	BDL	BDL		
SEP	BDL	BDL		
NOV	BDL	BDL		
STYRENE (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = 100 (D1)
JAN	BDL	BDL		
MAR	.050 <T	.200 <T		
MAY	BDL	BDL		
JUL	BDL	BDL		
SEP	BDL	BDL		
NOV	BDL	BDL		
METHYLENE CHLORIDE (UG/L)			DET'N LIMIT = 0.50	GUIDELINE = 50 (A1)
JAN	BDL	BDL		
MAR	BDL	BDL		
MAY	.500 <T	BDL		
JUL	BDL	BDL		
SEP	BDL	BDL		
NOV	BDL	BDL		
CHLOROFORM (UG/L)			DET'N LIMIT = 0.10	GUIDELINE = 350 (A1+)
JAN	BDL	28.400		
MAR	BDL	32.000		
MAY	BDL	38.300		
JUL	BDL	29.800		
SEP	BDL	20.700		
NOV	BDL	17.700		
DICHLOROBROMOMETHANE (UG/L)			DET'N LIMIT = 0.05	GUIDELINE = 350 (A1+)
JAN	BDL	11.250		
MAR	BDL	9.500		
MAY	BDL	12.700		
JUL	BDL	12.350		
SEP	BDL	9.250		
NOV	BDL	8.400		

TABLE 5
DRINKING WATER SURVEILLANCE PROGRAM PORT DOVER (DOANS HOLLOW) SPRING SUPPLY 1990

DOANS HOLLOW SPRING SUPPLY

	RAW	TREATED		
CHLORODIBROMOMETHANE (UG/L)			DET'N LIMIT = 0.10	GUIDELINE = 350 (A1+)
JAN	BDL	3.100		
MAR	BDL	2.500		
MAY	BDL	3.300		
JUL	BDL	4.300		
SEP	BDL	2.900		
NOV	BDL	2.700		
BROMOFORM (UG/L)			DET'N LIMIT = 0.20	GUIDELINE = 350 (A1+)
JAN	BDL	BDL		
MAR	BDL	BDL		
MAY	BDL	BDL		
JUL	BDL	.200 <T		
SEP	BDL	BDL		
NOV	BDL	BDL		
TOTAL TRIHALOMETHANES (UG/L)			DET'N LIMIT = 0.50	GUIDELINE = 350 (A1)
JAN	BDL	42.750		
MAR	BDL	44.000		
MAY	BDL	54.300		
JUL	BDL	46.700		
SEP	BDL	32.800		
NOV	BDL	28.800		

TRACE LEVELS OF TOLUENE ARE LABORATORY ARTIFACTS DERIVED FROM THE ANALYTICAL METHODOLOGY.

TRACE LEVELS OF STYRENE ARE CONSIDERED TO BE LABORATORY ARTIFACTS RESULTING FROM THE LABORATORY SHIPPING CONTAINERS.

TABLE 6
DRINKING WATER SURVEILLANCE PROGRAM 1990

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE
BACTERIOLOGICAL			
FECAL COLIFORM MEMBRANE FILTRATION	CT/100ML	0	0 (A1)
STANDARD PLATE COUNT MEMBRANE FILT.	CT/ML	0	500/ML (A3)
TOTAL COLIFORM BACKGROUND MF	CT/100ML	0	N/A
TOTAL COLIFORM MEMBRANE FILTRATION	CT/100ML	0	5/100ML (A1)
CHEMISTRY (FLD)			
FIELD COMBINED CHLORINE RESIDUAL	MG/L	0	N/A
FIELD TOTAL CHLORINE RESIDUAL	MG/L	0	N/A
FIELD FREE CHLORINE RESIDUAL	MG/L	0	N/A
FIELD PH	DMNSLESS	N/A	6.5-8.5 (A3)
FIELD TEMPERATURE	DEG.C	N/A	15.0 (A3)
FIELD TURBIDITY	FTU	N/A	1.0 (A1)
CHEMISTRY (LAB)			
ALKALINITY	MG/L	0.2	30-500 (A3)
AMMONIUM TOTAL	MG/L	0.002	0.05 (F2)
CALCIUM	MG/L	0.2	100 (F2)
CHLORIDE	MG/L	0.2	250 (A3)
COLOUR	TCU	0.5	5.0 (A3)
CONDUCTIVITY	UMHO/CM	1.0	400 (F2)
CYANIDE	MG/L	0.001	0.2 (A1)
DISSOLVED ORGANIC CARBON	MG/L	0.1	5.0 (A3)
FLUORIDE	MG/L	0.01	2.4 (A1)
HARDNESS	MG/L	0.5	80-100 (A4)
LANGELIERS INDEX	DMNSLESS	N/A	N/A
MAGNESIUM	MG/L	0.1	30.0 (F2)
NITRITE	MG/L	0.001	1.0 (A1)
NITROGEN TOTAL KJELDAHL	MG/L	0.02	N/A
PH	DMNSLESS	N/A	6.5-8.5 (A4)
PHOSPHORUS FIL REACT	MG/L	0.0005	N/A
PHOSPHORUS TOTAL	MG/L	0.002	0.4 (F2)
SODIUM	MG/L	0.2	200 (A4)
SULPHATE	MG/L	0.2	500 (A3)
TOTAL NITRATES	MG/L	0.005	10.0 (A1)
TURBIDITY	FTU	0.05	1.0 (A1)
CHLOROAROMATICS			
123 TRICHLOROBENZENE	NG/L	5.0	N/A
1234 TETRACHLOROBENZENE	NG/L	1.0	N/A
1235 TETRACHLOROBENZENE	NG/L	1.0	N/A
124 TRICHLOROBENZENE	NG/L	5.0	10000 (I)
1245-TETRACHLOROBENZENE	NG/L	1.0	38000 (D4)
135 TRICHLOROBENZENE	NG/L	5.0	N/A
236 TRICHLOROTOLUENE	NG/L	5.0	N/A
245 TRICHLOROTOLUENE	NG/L	5.0	N/A
26A TRICHLOROTOLUENE	NG/L	5.0	N/A
HEXACHLOROBENZENE	NG/L	1.0	10 (C1)
HEXACHLOROBUTADIENE	NG/L	1.0	450 (D4)
HEXACHLOROCYCLOPENTADIENE	NG/L	5.0	206000 (D4)
HEXACHLOROETHANE	NG/L	1.0	1900 (D4)
OCTACHLOROSTYRENE	NG/L	1.0	N/A
PENTACHLOROBENZENE	NG/L	1.0	74000 (D4)
CHLOROPHENOLS			
234 TRICHLOROPHENOL	NG/L	100.0	N/A
2345 TETRACHLOROPHENOL	NG/L	20.0	N/A
2356 TETRACHLOROPHENOL	NG/L	10.0	N/A

TABLE 6
DRINKING WATER SURVEILLANCE PROGRAM 1990

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE
245 TRICHLOROPHENOL	NG/L	100.0	2600000 (D4)
246 TRICHLOROPHENOL	NG/L	20.0	5000 (A1)
PENTACHLOROPHENOL	NG/L	10.0	60000 (A1)
METALS			
ALUMINUM	UG/L	0.10	100 (A4)
ANTIMONY	UG/L	0.05	146 (D4)
ARSENIC	UG/L	0.10	25 (A1)
BARIUM	UG/L	0.05	1000 (A2)
BERYLLIUM	UG/L	0.05	6800 (D4)
BORON	UG/L	2.00	5000 (A1)
CADMIUM	UG/L	0.05	5 (A1)
CHROMIUM	UG/L	0.50	50 (A1)
COBALT	UG/L	0.02	N/A
COPPER	UG/L	0.50	1000 (A3)
IRON	UG/L	6.00	300 (A3)
LEAD	UG/L	0.05	10 (A1)
MANGANESE	UG/L	0.05	50 (A3)
MERCURY	UG/L	0.02	1 (A1)
MOLYBDENUM	UG/L	0.05	N/A
NICKEL	UG/L	0.20	350 (D3)
SELENIUM	UG/L	1.00	10 (A1)
SILVER	UG/L	0.05	50 (A1)
STRONTIUM	UG/L	0.10	N/A
THALLIUM	UG/L	0.05	13 (D4)
TITANIUM	UG/L	0.50	N/A
URANIUM	UG/L	0.05	100 (A1)
VANADIUM	UG/L	0.05	N/A
ZINC	UG/L	0.20	5000 (A3)
PAH			
ANTHRACENE	NG/L	1.0	N/A
BENZO(A) ANTHRACENE	NG/L	20.0	N/A
BENZO(A) PYRENE	NG/L	5.0	10.0 (A1)
BENZO(B) CHRYSENE	NG/L	2.0	N/A
BENZO(B) FLUORANTHENE	NG/L	10.0	N/A
BENZO(E) PYRENE	NG/L	50.0	N/A
BENZO(G,H,I) PERYLENE	NG/L	20.0	N/A
BENZO(K) FLUORANTHENE	NG/L	1.0	N/A
CHRYSENE	NG/L	50.0	N/A
CORONENE	NG/L	10.0	N/A
DIBENZO(A,H) ANTHRACENE	NG/L	10.0	N/A
DIMETHYL BENZO(A) ANTHRACENE	NG/L	5.0	N/A
FLUORANTHENE	NG/L	20.0	42000.0 (D4)
INDENO(1,2,3-C,D) PYRENE	NG/L	20.0	N/A
PERYLENE	NG/L	10.0	N/A
PHENANTHRENE	NG/L	10.0	N/A
PYRENE	NG/L	20.0	N/A
PESTICIDES & PCB			
ALACHLOR (LASSO)	NG/L	500.0	5000 (A2)
ALDRIN	NG/L	1.0	700 (A1)
ALPHA HEXACHLOROCYCLOHEXANE (BHC)	NG/L	1.0	700 (G)
ALPHA CHLORDANE	NG/L	2.0	7000 (A1)
AMETRINE	NG/L	50.0	300000 (D3)
ATRATONE	NG/L	50.0	N/A
ATRAZINE	NG/L	50.0	60000 (A2)
DES ETHYL ATRAZINE	NG/L	200.0	60000 (A2)
BETA HEXACHLOROCYCLOHEXANE (BHC)	NG/L	1.0	300 (G)
CYANAZINE (BLADEX)	NG/L	100.0	10000 (A2)
O,P-DDD	NG/L	5.0	10 (I)
DIELDRIN	NG/L	2.0	700 (A1)
ENDOSULFAN 1 (THIODAN I)	NG/L	2.0	74000 (D4)
ENDOSULFAN 2 (THIODAN II)	NG/L	5.0	74000 (D4)

TABLE 6
DRINKING WATER SURVEILLANCE PROGRAM 1990

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE
ENDOSULFAN SULPHATE (THIODAN SULPHATE)	NG/L	5.0	N/A
ENDRIN	NG/L	5.0	1600 (D3)
GAMMA CHLORDANE	NG/L	2.0	7000 (A1)
HEPTACHLOR	NG/L	1.0	3000 (A1)
HEPTACHLOR EPOXIDE	NG/L	1.0	3000 (A1)
LINDANE (GAMMA BHC)	NG/L	1.0	4000 (A1)
METHOXYCHLOR	NG/L	5.0	900000 (A1)
METOLACHLOR	NG/L	500.0	50000 (A2)
METRIBUZIN (SENCOR)	NG/L	100.0	80000 (A1)
MIREX	NG/L	5.0	N/A
P,P-DDD	NG/L	5.0	N/A
O,P-DDT	NG/L	5.0	30000 (A1)
OXYCHLORDANE	NG/L	2.0	N/A
PCB	NG/L	20.0	3000 (A2)
PPDDE	NG/L	1.0	30000 (A1)
PPDDT	NG/L	5.0	30000 (A1)
PROMETONE	NG/L	50.0	52500 (D3)
PROMETRYNE	NG/L	50.0	1000 (A2)
PROPAZINE	NG/L	50.0	700000 (D3)
SIMAZINE	NG/L	50.0	10000 (A2)
D-ETHYL SIMAZINE	NG/L	200.0	10000 (A2)
TOXAPHENE	NG/L	500.0	5000 (A1)
PHENOLICS			
PHENOLICS (UNFILTERED REACTIVE)	UG/L	0.2	2 (A4)
SPECIFIC PESTICIDES			
2,4 D PROPIONIC ACID	NG/L	100.	N/A
2,4,5-TRICHLOROPHENOXY ACETIC ACID	NG/L	50.	280000 (A1)
2,4-DICHLOROBUTYRIC ACID (2,4-D)	NG/L	100.	100000 (A1)
24-DICHLORORPHENOXYBUTYRIC ACID (24-DB)	NG/L	200.	18000 (B3)
BUTYLATE (SUTAN)	NG/L	2000.	245000 (D3)
CARBARYL (SEVIN)	NG/L	200.	90000 (A1)
CARBOFURAN	NG/L	2000.	90000 (A1)
CHLORPYRIFOS (DURSBAN)	NG/L	20.	N/A
CICP (CHLORPROPHAM)	NG/L	2000.	350000 (G)
DIALLATE	NG/L	2000.	N/A
DIAZINON	NG/L	20.	20000 (A1)
DICAMBA	NG/L	50.	120000 (A1)
DICHLOROVOS	NG/L	20.	N/A
EPTAN	NG/L	2000.	N/A
ETHION	NG/L	20.	35000 (G)
IPC	NG/L	2000.	N/A
MALATHION	NG/L	20.	190000 (A1)
METHYL PARATHION	NG/L	50.	7000 (B3)
METHYLTRITHION	NG/L	20.	N/A
MEVINPHOS	NG/L	20.	N/A
PARATHION	NG/L	20.	50000 (A1)
PHORATE (THIMET)	NG/L	20.	2000 (A2)
PROPOXUR (BAYGON)	NG/L	2000.	140000 (D3)
RELDAN	NG/L	20.	N/A
RONNEL	NG/L	20.	N/A
SILVEX (2,4,5-TP)	NG/L	20.	10000 (A1)
VOLATILES			
1,1 DICHLOROETHANE	UG/L	0.10	N/A
1,1 DICHLOROETHYLENE	UG/L	0.10	7 (D1)
1,2 DICHLOROBENZENE	UG/L	0.05	200 (A1)
1,2 DICHLOROETHANE	UG/L	0.05	5 (A1)

TABLE 6
DRINKING WATER SURVEILLANCE PROGRAM 1990

SCAN/PARAMETER	UNIT	DETECTION LIMIT	GUIDELINE
1,2 DICHLOROPROPANE	UG/L	0.05	5 (D1)
1,3 DICHLOROBENZENE	UG/L	0.10	3750 (D3)
1,4 DICHLOROBENZENE	UG/L	0.10	5 (A1)
111, TRICHLOROETHANE	UG/L	0.02	200 (D1)
112 TRICHLOROETHANE	UG/L	0.05	0.6 (D4)
1122 TETRACHLOROETHANE	UG/L	0.05	0.17(D4)
BENZENE	UG/L	0.05	5 (A1)
BROMOFORM	UG/L	0.20	350 (A1+)
CARBON TETRACHLORIDE	UG/L	0.20	5 (A1)
CHLOROBENZENE	UG/L	0.10	1510 (D3)
CHLORODIBROMOMETHANE	UG/L	0.10	350 (A1+)
CHLOROFORM	UG/L	0.10	350 (A1+)
DICHLOROBROMOMETHANE	UG/L	0.05	350 (A1+)
ETHLYENE DIBROMIDE	UG/L	0.05	50 (D1)
ETHYLBENZENE	UG/L	0.05	2.4 (A3)
M-XYLENE	UG/L	0.10	300 (A3*)
METHYLENE CHLORIDE	UG/L	0.50	50 (A1)
O-XYLENE	UG/L	0.05	300 (A3*)
P-XYLENE	UG/L	0.10	300 (A3*)
STYRENE	UG/L	0.05	100 (D1)
TETRACHLOROETHYLENE	UG/L	0.05	5 (D1)
TRANS 1,2 DICHLOROETHYLENE	UG/L	0.10	70 (D1)
TOLUENE	UG/L	0.05	24 (A3)
TOTAL TRIHALOMETHANES	UG/L	0.50	350 (A1)
TRICHLOROETHYLENE	UG/L	0.10	50 (A1)

Appendix A

DRINKING WATER SURVEILLANCE PROGRAM
PROGRAM DESCRIPTION

The Drinking Water Surveillance Program (DWSP) for Ontario monitors drinking water quality at municipal water supply systems. The DWSP Database Management System provides a computerized drinking water quality information system for the supplies monitored. The objectives of the program are to provide:

- immediate, reliable, current information on drinking water quality;
- a flagging mechanism for guideline exceedance;
- a definition of contaminant levels and trends;
- a comprehensive background for remedial action;
- a framework for assessment of new contaminants; and
- an indication of treatment efficiency of plant processes.

PROGRAM

The DWSP officially began in April 1986 and is designed to eventually include all municipal water supplies in Ontario. In 1990, 76 systems were being monitored. Water supply locations have been prioritized for surveillance based primarily on criteria such as population density, probability of contamination and geographical location.

An ongoing assessment of future monitoring requirements at each location will be made. Monitoring will continue at the initial locations at an appropriate level and further locations will be phased into the program as resources permit.

A major goal of the program is to collect valid water quality data in context with plant operational characteristics at the time of sampling. As soon as sufficient data have been accumulated and analyzed, both the frequency of sampling and the range of parameters may be adjusted accordingly.

Assessments are carried out at all locations prior to initial sampling, in order to acquire complete plant process and distribution system details and to designate (and retrofit if necessary) all sampling systems and locations. This ensures that the sampled water is a reflection of the water itself.

Samples are taken of raw (ambient water) and treated water at the treatment plant and of consumer's tap water in the distribution system. In order to determine possible effects of distribution on water quality, both standing and free flow water in old and new sections of the distribution system are sampled. Sampling is carried out by operational personnel who have been trained in applicable procedures.

Comprehensive standardized procedures and field test kits are supplied to sampling personnel. This ensures that samples are taken and handled according to standard protocols and that field testing will supply reliable data. All field and laboratory analyses are carried out using "approved documented procedures". Most laboratory analyses are carried out by the Ministry of Environment (MOE), Laboratory Services Branch. Radionuclides are analyzed by the Ministry of Labour.

DATA REPORTING MECHANISM

When the analytical results are transferred from the MOE laboratory into the DWSP system, printouts of the completed analyses are sent to the MOE District Officer, the appropriate operational staff and are also retained by the DWSP unit.

PROGRAM INPUTS AND OUTPUTS

There are four major inputs and four major outputs in the program.

Program Input - Plant and Distribution System Description

The system description includes plant specific non-analytical information acquired through a questionnaire and an initial plant visit. During the initial assessment of the plant and distribution system, questionnaire content is verified and missing information added. It is intended that all data be kept current with scheduled annual updates.

The Plant and Distribution System Description consists of the following seven components:

1. PROCESS COMPONENT INVENTORY

All physical and chemical processes to which the water is subjected, from the intake pipe to the consumers' tap (where possible), are documented. These include: process type, general description of physical structures, material types, sizes, and retention time for each process within the plant. The processes may be as simple as transmission or as complex as carbon adsorption.

2. TREATMENT CHEMICALS

Chemicals used in the treatment processes, their function, application point, supplier and brand-name are recorded. Chemical dosages applied on the day of sampling are recorded in DWSP.

3. PROCESS CONTROL MEASUREMENTS

Documentation of in-plant monitoring of process parameters (eg. turbidity, chlorine residuals, pH, aluminum residuals) including methods used, monitoring locations and frequency is contained in this section. Except for the recorded Field Data, in-plant monitoring results are not retained in DWSP but are retained by the water treatment plant personnel.

4. DESIGN FLOW AND RETENTION TIME

Hydraulic capacity, designed and actual, is noted here. Retention time (the time that a block of water is retained in the plant) is also noted. Maximum, minimum and average flow, as well as a record of the flow rate on the day of sampling, are recorded in DWSP.

5. DISTRIBUTION SYSTEM DESCRIPTION

This area includes the storage and transmission characteristics of the distribution system after the water leaves the plant.

6. SAMPLING SYSTEM

Each plant is assessed for its adequacy in terms of the sampling of bacteriological, organic and inorganic parameters. Prime considerations in the assessment and design of the sampling system are:

i/ the sample is an accurate representation of the actual water condition, eg. raw water has had no chemical treatment;

ii/ the water being sampled is not being modified by the sampling system;

iii/ the sample tap must be in a clean area of the plant, preferably a lab area; and

iv/ the sample lines must be organically inert (no plastic, ideally stainless steel).

It is imperative that the sampled water be a reflection not of the sampling system but of the water itself.

The sampling system documentation includes: origin of the water; date sampling was initiated; size, length and material type (intake,

discharge and tap); pump characteristics (model, type, capacity); and flow rate.

7. PERSONNEL
This section contains the names, addresses and phone numbers of current plant management and operational staff, distribution system management and operational staff, Medical Officer of Health and appropriate MOE personnel associated with the plant.

Program Input - Field Data

The second major input to DWSP is field data. Field data is collected at the plant and from the distribution system sites on the day of sampling. Field data consists of general operating conditions and the results of testing for field parameters. General operating conditions include chemicals used, dosages, flow and retention time on the day of sampling, as well as, monthly maximum, minimum and average flows. Field parameters include turbidity, chlorine residuals (free, combined and total), temperature and pH. These parameters are analyzed according to standardized DWSP protocols to allow for interplant comparison.

Program Input - Laboratory Analytical Data

The third major input to DWSP is Laboratory Analytical Data. Samples gathered from the raw, treated and distribution sampling sites are analyzed for the presence of approximately 180 parameters at a frequency of two to twelve times per year. Sixty-five percent of the parameters are organic. Parameters measured may have health or aesthetic implications when present in drinking water. Many of the parameters may be used in the treatment process or may be treatment by-products. Due to the nature of certain analytical instruments, parameters may be measured in a "scan" producing some results for parameters that are not on the DWSP priority list, but which may be of interest. The majority of parameters are measured on a routine basis. Those that are technically more difficult and/or costly to analyze, however, are done less frequently. These include Specific Pesticides and Chlorophenols.

Although the parameter list is extensive, additional parameters with the potential to cause health or aesthetic related problems may be added provided reliable analytical and sampling methods exist.

All laboratory generated data is derived from standardized, documented analytical protocols. The analytical method is an integral part of the data and as methods change, notation will be made and comparison data documented.

Program Input - Parameter Reference Information

The fourth major input to DWSP is Parameter Reference Information. This is a catalogue of information for each substance analyzed on DWSP. It includes parameter name and aliases, physical and chemical properties, basic toxicology, world-wide health limits, treatment methods and uses. The Parameter Reference Information is computerized and can be accessed through the Query function of the DWSP database. An example is shown in figure 1.

Program output - Query

All DWSP information is easily accessed through the Query function, therefore, anything from addresses of plant personnel to complete water quality information for a plant's water supply is instantly available. The DWSP computer system makes relatively complex inquiries manageable. A personal password allowing access into the DWSP query mode in all MOE offices is being developed by the DWSP group.

Program Output - Action Alerts

Drinking Water quality in Ontario is evaluated against provincial objectives as outlined in the Ontario Drinking Water Objectives publication. Should the reported level of a substance in treated water exceed the Ontario Drinking Water Objective, an "Action Alert" requiring resampling and confirmation is issued. This assures that operational staff, health authorities and the public are notified as soon as possible of the confirmation of an exceedance and remedial action taken. This report supplies a history of the occurrence of past exceedances at the plant plus a historical summary on the parameter of concern.

In the absence of Ontario Drinking Water Objectives, guidelines/limits from other agencies are used. The Parameter Listing System, published by MOE (ISBN 0-7729-4461-X), catalogues and keeps current guidelines for 650 parameters from agencies throughout the world. If these guidelines are exceeded, the results are flagged and evaluated by DWSP personnel. An "Action Alert" will be issued if warranted.

Program Output - Report Generation

Custom reports can be generated from DWSP to meet MOE Regional needs and to respond to public requests.

Program Output - Annual Reports

It is the practice of DWSP to produce an annual report containing analytical data along with companion plant information.

FIG.1

MOE - DRINKING WATER ASSESSMENT PROGRAM (DWSP)

PARAMETER REFERENCE INFORMATION

BENZENE (B2001P) VOLATILES

CLASS: HEALTH METHOD: POCODO UNIT: µg/L

SOURCE	FROM	TO	METHOD	GUIDELINE	UNIT	NOTE
CAL C	85/01			0.700	µg/L	AL
CDWG C	87/01			5.000	µg/L	MAC
EPA C	87/07			5.000	µg/L	MCL
EPAA C	80/11			6.600	µg/L	AMBIENT **
FERC C	84/05			1.000	µg/L	MCL
WHO C	84/01			10.000	µg/L	GV

DESCRIPTION:**NAME:** BENZENE

CAS#: 71-43-2

MOLECULAR FORMULAE: C_6H_6

DETECTION LIMIT: (FOR METHOD POCODO) 0.05 µg/L

SYNONYMS: BENZOL; BENZOLE; COAL NAPHTHA; CARBON OIL (27). CYCLOHEXATRIENE (41).

CHARACTERISTICS: COLOURLESS TO LIGHT-YELLOW, MOBILE, NON-POLAR LIQUID, OF HIGHLY REFRACTIVE NATURE, AROMATIC ODOUR; VAPOURS BURN WITH SMOKING FLAME (30).

PROPERTIES: SOLUBILITY IN WATER: 1780-1800 mg/L AT 25C (41). THRESHOLD ODOUR: 0.5 - 10 PPM IN WATERTHRESHOLD TASTE: 0.5 mg/L IN WATER (39).
ENVIRONMENTAL FATE: MAY BIOACCUMULATE IN LIVING ORGANISMS AND APPEARS TO ACCUMULATE IN ANIMAL TISSUES THAT EXHIBIT A HIGH LIPID CONTENT OR REPRESENT MAJOR METABOLIC SITES, SUCH AS LIVER OR BRAIN; SMALL QUANTITIES EVAPORATE FROM SOILS OR ARE DEGRADED RATHER QUICKLY (80).

SOURCES: COMMERCIAL: PETROLEUM REFINING; SOLVENT RECOVERY; COAL TAR DISTILLATION (39); FOOD PROCESSING AND TANNING INDUSTRIES; COMBUSTION OF CAR EXHAUST.
ENVIRONMENTAL: POSSIBLE SOURCE IS RUNOFF.

USES: DETERGENTS; NYLON; INTERMEDIATE IN PRODUCTION OF OTHER COMPOUNDS, SUCH AS PESTICIDES; SOLVENT FOR EXTRACTION AND RECTIFICATION IN RUBBER INDUSTRY; DEGREASING AND CLEANSING AGENT; GASOLINE.

TOXICITY: RATING: 4 (VERY TOXIC).
ACUTE: IRRITATING TO MUCOUS MEMBRANES; SYMPTOMS INCLUDE RESTLESSNESS, CONVULSIONS, EXCITEMENT, DEPRESSION; DEATH MAY FOLLOW RESPIRATORY FAILURE.
CHRONIC: MAY CAUSE ANAEMIA AND LEUKAEMIA (45); MUTAGENIC.
MODE OF ACTION: CHROMOABERRATION IN LYMPHOCYTE CULTURES.

CARCINOGENICITY: A KNOWN HUMAN CARCINOGEN.

REMOVAL: THE FOLLOWING PROCESSES HAVE BEEN SUCCESSFUL IN REMOVING BENZENE FROM WASTEWATER: GAC ADSORPTION, PRECIPITATION WITH ALUM AND SUBSEQUENT REMOVAL VIA SEDIMENTATION, COAGULATION AND FLOCCULATION, SOLVENT EXTRACTION, OXIDATION

ADDITIONAL PROPERTIES:
MOLECULAR WEIGHT: 78.12
MELTING POINT: 5.5°C (27).
BOILING POINT: 80.1°C (27).
SPECIFIC GRAVITY: 0.8790 AT 20°C (27).
VAPOUR PRESSURE: 100 MM AT 26.1°C (27).
HENRY'S LAW CONSTANT: 0.00555 ATM-M3/MOLE (41).
LOG OCT./WATER PARTITION COEFFICIENT: 1.95 TO 2.13 (39).
CARBON ADSORPTION: K=1.0; 1/N=1.6; R=0.97; PH=5.3 (41)SEDIMENT/WATER PARTITION COEFFICIENT: NO DATA

NOTES: EPA PRIORITY POLLUTANT.

Appendix B

DWSP SAMPLING GUIDELINE

i) Raw and Treated at Plant

General Chemistry	-500 mL plastic bottle (PET 500) -rinse bottle and cap with sample water three times -fill to 2 cm from top
Bacteriological	-220 mL plastic bottle with white seal on cap -do <u>not</u> rinse bottle, preservative has been added -avoid touching bottle neck or inside of cap -fill to top of red label as marked
Metals	-500 mL plastic bottle (PET 500) -rinse bottle and cap three times -fill to 2 cm from top -add 10 drops nitric acid (HNO_3) (**Caution:** HNO_3 is corrosive)
Volatiles (duplicates) (OPOPUP)	-45 mL glass vial with septum (teflon side must be in contact with sample) -do <u>not</u> rinse bottle -fill bottle completely without bubbles
Organics (OWOC),(OWTRI),(OAPAHX)	-1 L amber glass bottle per scan -do <u>not</u> rinse bottle -fill to 2 cm from top -when 'special pesticides' are requested three extra bottles must be filled

Cyanide	-500 mL plastic bottle (PET 500) -rinse bottle and cap three times -fill to 2 cm from top -add 10 drops sodium hydroxide (NaOH) (**Caution:** NaOH is corrosive)
Mercury	-250 mL glass bottle -rinse bottle and cap three times -fill to top of label -add 20 drops each nitric acid (HNO_3) and potassium dichromate ($K_2Cr_2O_7$) (**Caution:** HNO_3&$K_2Cr_2O_7$ are corrosive)
Phenols	-250 mL glass bottle -do <u>not</u> rinse bottle, preservative has been added -fill to top of label
Radionuclides (as scheduled)	-4 L plastic jug -do <u>not</u> rinse, carrier added -fill to 5 cm from top
Organic Characterization (GC/MS - once per year)	-1 L amber glass bottle; instructions as per organic -250 mL glass bottle -do <u>not</u> rinse bottle -fill completely without bubbles

<u>Steps:</u>

1. Let sampling water tap run for an adequate time to clear the sample line.

2. Record time of day on submission sheet.

3. Record temperature on submission sheet.

4. Fill up all bottles as per instructions.

5. Record chlorine residuals (free, combined and total for treated water only), turbidity and pH on submission sheet.

ii) Distribution Samples (standing water)

General Chemistry	-500 mL plastic bottle (PET 500) -rinse bottle and cap with sample water three times -fill to 2 cm from top
Metals	-500 mL plastic bottle (PET 500) -rinse bottle and cap three times -fill to 2 cm from top -add 10 drops nitric acid (HNO_3) (**Caution:** HNO_3 is corrosive)

Steps:

1. Record time of day on submission sheet.
2. Place bucket under tap and open cold water.
3. Fill to predetermined volume.
4. After mixing the water, record the temperature on the submission sheet.
5. Fill general chemistry and metals bottles.
6. Record chlorine residuals (free, combined and total), turbidity and pH on submission sheet.

iii) Distribution Samples (free flow)

General Chemistry	-500 mL plastic bottle (PET 500) -rinse bottle and cap with sample water three times -fill to 2 cm from top
Bacteriological	-250 mL plastic bottle with white seal on cap -do not rinse bottle, preservative has been added -avoid touching bottle neck or inside of cap -fill to top of red label as marked

Metals	-500 mL plastic bottle (PET 500) -rinse bottle and cap three times -fill to 2 cm from top -add 10 drops nitric acid HNO_3 (**Caution:** HNO_3 is corrosive)
Volatiles (duplicate) (OPOPUP)	-45 mL glass vial with septum (teflon side must be in contact with sample) -do <u>not</u> rinse bottle, preservative has been added -fill bottle completely without bubbles
Organics (OWOC) (OAPAHX)	-1 L amber glass bottle per scan -do <u>not</u> rinse bottle -fill to 2 cm from top

<u>Steps:</u>

1. Record time of day on submission sheet.

2. Let cold water flow for five minutes.

3. Record temperature on submission sheet.

4. Fill all bottles as per instructions.

5. Record chlorine residuals (free, combined and total), turbidity and pH on submission sheet.